

and mistakenly supposed to follow from this, namely, that knowing these laws of movement and behavior, we therefore know that the world is like a great self-operating machine, with no novelty, no meaning, and no purpose in it. This crude materialism pictures the universe as a vast aggregate of material bodies "enforcing for all eternity certain motions on each other, and a perception of those motions on us." Such a conclusion forgets that in mechanical laws we have only a description, and by no means a complete description, of regularity in the sequence of certain kinds of activities. Such a description says nothing whatsoever as to *why* the motion takes place, or as to *why* it follows this order, or as to the possibility that other orders of relation may exist in other than purely mechanical activities. That is, the whole issue as to whether anything but mechanical relations actually exist in the world (*e.g.*, in the human will) presents an entirely different problem, and a problem on which mechanical laws, as such, can shed little or no light.

Our first conclusion, then, may be that in dealing with such fields as physical mechanics and chemistry, and in the ordinary manipulation of things in the course of every-day living, we are justified by experience in relying upon a quite mechanical regularity in the order of things. But we shall remember that this mechanical regularity and the laws which express it are products of experience—they may be so probable as to be reliable, but they are not certain. Further, and more important to remember, these laws of mechanical regularity, based on experience, can rightly be held to apply only so far as experience warrants their application. Thus Professor Lloyd Morgan is justified in saying that "Empirical science has no concern with the doctrine of determinism. . . . The exponents of natural science state in compendious generalizations that which has been found under observation to happen, or that which may be inferred to have happened in the past, and base thereon more or less confident expectation of what will probably happen again in a like relational field. There is, for empirical science, no

PHILOSOPHY



THE MACMILLAN COMPANY

NEW YORK • CHICAGO

DALLAS • ATLANTA • SAN FRANCISCO

LONDON • MANILA

IN CANADA

BRETT-MACMILLAN LTD.

GALT, ONTARIO

PHILOSOPHY

An Introductory Study of
Fundamental Problems and Attitudes

BY

CLIFFORD BARRETT
PRINCETON UNIVERSITY

NEW YORK
THE MACMILLAN COMPANY

COPYRIGHT, 1935,
BY THE MACMILLAN COMPANY

ALL RIGHTS RESERVED—NO PART OF THIS BOOK MAY BE
REPRODUCED IN ANY FORM WITHOUT PERMISSION IN WRITING
FROM THE PUBLISHER, EXCEPT BY A REVIEWER WHO WISHES
TO QUOTE BRIEF PASSAGES IN CONNECTION WITH A REVIEW
WRITTEN FOR INCLUSION IN MAGAZINE OR NEWSPAPER

Eleventh Printing, 1959

PREFACE

Philosophy is concerned with a wide variety of problems, and with respect to these problems philosophers have held numerous and diverse conclusions. It is not the specific content of these conclusions, but the spirit and method by which they were reached, which entitles them to be described as *philosophical*. If the same conclusions had been arrived at by guesswork or accepted thoughtlessly on conventional grounds, they would hold no place in a discussion of philosophy. Hence, an introduction to philosophy must do more than merely describe historical or contemporary systems, attitudes, and problems. It must seek to introduce the student to that spirit of reasoned inquiry which is the essential characteristic of all philosophical thinking. This cannot be accomplished merely through description of what others think or have thought. If there is to be even the beginning of a genuine knowledge of philosophy's purpose and method it must be won through an expending of effort to understand the significance of problems, to grasp relevant issues, and to deal with them as best one can for oneself. Incidentally, from such effort alone can come not only profit, but any enduring interest. The ever-present hazard confronting introductory or even somewhat advanced courses in the general problems of philosophy lies in the possibility that at their close, students who may feel a certain elation at having surveyed so vast an expanse of human thought, nevertheless, in fact may have gained no greater skill in analysis, no increased ability in rigorous thinking, no heightened deftness or subtlety in the treatment of intellectual issues.

On the other hand, the fundamental problems of philosophy have a long and instructive history. To them, the most profound thought of the ages has been devoted. Errors as well as valid conclusions have proved instructive and so-

contributed to subsequent thought. More significant attitudes have frequently received their clearest and most thorough presentation in the thought of earlier proponents, and often it is from their presentations that the student best may gain his own elementary insight. To neglect all of this, and to ask the student to rely altogether upon his own thinking, is to deprive him unnecessarily of a highly useful body of knowledge—a fact deserving particular attention in the case of that large number who may elect but one or two courses in philosophy as a means of gaining added background for study in other fields. Even more important are the shallows into which discussion usually has been found to drift when students have remained unacquainted with the more profound and suggestive treatments of their subjects by the classic writers. Furthermore, it is the belief of the writer that at the close of even his introductory course in philosophy it is desirable that rather definite significance should attach itself in the student's mind to such names as Plato, Descartes, Locke, Hume, and Kant.

In the following pages, the number of problems treated has been limited somewhat more severely than may be usual, and derivative problems are treated in their relationship to more fundamental issues, rather than independently. In this way it is hoped that certain tendencies towards superficiality which have been widely criticized in introductory courses may be diminished and opportunity given for more intensive consideration and for individual reflection at points of focal interest. Problems have been selected with two types of courses in mind: (1) those which may require their basic reading from a textbook, accompanied by lectures or class discussion; (2) those which require the reading of chosen philosophical classics and wish a more general systematic treatment of problems to precede or accompany this reading. Thus are added both a systematic analysis of the problems presented by one or two classic authors, and also the perspective afforded by familiarity with opposed attitudes, both historical and contemporary. The combina-

tion of purposes has not been difficult to effect. Where classics are read, these ordinarily are selected from such works as Plato's *Republic*, Descartes' *Meditations*, or Berkeley's *Principles of Human Knowledge*. The problems dealt with in such works are fundamental and appear among those which may most satisfactorily be considered in courses of the first type. The addition of certain crucial problems and more recent considerations which may not have been dealt with by particular early writers is felt to be desirable for courses following either plan.

Throughout the greater part of the book, the usual method of treatment follows roughly the order: (1) an account of the meaning of the problem itself; (2) accounts of more significant attitudes which have been taken with respect to it—each frequently being illustrated by a rather careful exposition of the thought of a leading historical representative of the position; (3) contemporary attitudes with regard to the problem. In presenting historical illustrations, it has been kept in mind that mere names or too brief and generalized summaries can be of no profit to the less mature student of a subject. It has been felt that there are important advantages to introducing contemporary attitudes in philosophy by relating and somewhat limiting the discussion to their bearing upon problems which the student has rather carefully considered for himself, and with the historical development of which he is somewhat familiar. Critical points and questions are suggested throughout and in certain instances in the form of critical résumés at the close of discussions.

The obligations of the writer extend far beyond the possible limits of recognition here. Mere agreement is an intellectual soporific. Far from presenting a futile "war of systems," the history of philosophical divergences is inseparable from the history of philosophical progress. Men of the past and the present, of all creeds and schools, provide the threads of diverse colors with which each of us weaves the more or less creative patterns of his own thoughts. In

addition to this quite universal debt, however, the writer wishes to express sincere appreciation of those distinguished teachers of philosophy with whom he has had the privilege of association, and whose skilful practice of the Socratic art he has enjoyed the opportunity of observing. A further debt which may not be allowed to pass unacknowledged is that to his students, past and present, whose interest, fresh insight, and even errors have been influential in guiding the present discussion.

CLIFFORD BARRETT

PRINCETON, N. J.
February, 1935.

CONTENTS

CHAPTER I

THE APPROACH TO PHILOSOPHY	PAGE I
The motive of philosophy, 1; The problem of adaptation—physical, social, intellectual, and spiritual, 4; The search for standards, 10; The nature of philosophical problems, 11.	

CHAPTER II

THE MEANING OF "EXPLANATION" FOR THE SCIENCES AND FOR PHILOSOPHY	15
I. Scientific Explanation, 15; Science and the sciences, 15; Observation, 16; Systematization, 18; Enumeration, 18; Measurement, 20; Logical synthesis— <i>parsimony</i> and <i>coherence</i> , 24; Limitations of the human investigator, 29; Functional explanation, 30.	
II. Differences between Philosophical and Scientific Explanation, 31; Differentiation of philosophy from the special sciences, 31; Philosophical explanation as more concrete, 32; Explanation of primary assumptions, 34; Critical examination of knowledge, 34; The search for <i>final</i> explanations, 36; The investigation of meanings and values, 37.	

CHAPTER III

SUBSTANCE AND PROPERTIES	41
I. The Need of Substance, 41; The ordinary view of substance in things, 41; Physical objects as permanent possibilities of sensation, 42; Substance as the basis of permanence in objects, 45; Substance as the basis of the independence and self-existence of the universe, 47; Substance as the cause of human sense-perceptions, 49.	
II. Difficulties with Substance, 51; The unity of an object, 51; The relation of a substance to its properties, 55.	
III. Substantial Monism and Pluralism, 56.	

CHAPTER IV

MATERIALISM	60
I. Fundamental Concepts of Materialism, 60.	
II. Ancient Materialism, 62; Materialistic tendencies in the earliest philosophies, 63; The materialism of Democritus, Epicurus, and Lucretius, 64—All things may be reduced to	

matter and motion, 65; Matter exists in the form of atoms, 66; All conscious life consists in motions of the atoms, 66; All motion is according to fixed law—differences of view on this, 67; The world is without intelligent purpose or a Divine Ruler, 68.

III. Modern Materialism, 69; Representatives—Hobbes, La Mettrie, and Haeckel, 69; The ultimacy of matter and motion, 69; The knowability of matter, 71.

IV. The Present Conception of Matter, 72; The atomic and electronic theories, 73.

V. Difficulties Now Facing Materialism, 75.

CHAPTER V

COSMIC DUALISM	78
I. Dualism of Form and Matter, 78; Dualism in early Greek philosophy, 79; Universality of <i>forms</i> , 81; Reality of <i>forms</i> , 83.	
II. The Dualism of Plato, 84.	
III. Dualism of Mind and Matter, 89.	
IV. The Dualism of Descartes, 90.	
V. The Dualism of Locke, 96; Criticism, 98.	

CHAPTER VI

PANTHEISM	99
I. Pantheism as a Philosophy, 99; Pantheism in Egypt and India, 99; Pantheism and Christianity, 100; Pantheism in modern philosophy, 101.	
II. Spinoza as a Representative of Pantheism, 102.	
III. Contemporary <i>Neutral Monism</i> , 106.	
IV. Modern Pantheism, 107; Literary expressions, 108; Strength and weakness, 110.	

CHAPTER VII

SPIRITUAL SUBSTANCE	113
I. The Banishment of Matter, 113.	
II. A World of Minds and of Ideas: Berkeley as a representative of this position, 115.	
III. Spiritual Force as the World-Substance: Leibniz as a representative of this position, 121; Criticism, 126.	

CHAPTER VIII

CONTEMPORARY VIEWS OF SUBSTANCE	128
I. Substance and Modern Science, 128.	
II. Idealistic View of Substance, 131.	
III. Pragmatic View of Substance, 134.	
IV. Realistic Views of Substance, 140; The view of <i>Critical Realism</i> , 142; The view of the <i>New Realism</i> , 144.	

CONTENTS

xi

CHAPTER IX

RELATIONS	PAGE 147
I. Problems Presented by Relations, 147.	
II. Types of Relations, 151; Spatial, 152; Temporal, 152; Quantitative, 153; Qualitative, 154; Causal, 154; Logical, 155.	
III. What Is a Relation?, 156.	
IV. Pluralism and External Relations, 158.	
V. Monism and Internal Relations: The Concept of the Absolute, 160.	

CHAPTER X

THE PROBLEM OF SPACE AND TIME	163
I. Space and Time as They Appear, 163; Space and Time as <i>wholes</i> , 164; Similarities and differences in Space and Time, 167.	
II. Space and Time as Extended Series, 169; The present as <i>point-instant</i> and as <i>saddleback</i> , or unit of experience, 170.	
III. The Problem of Motion, 171; The paradoxes of Zeno, 172.	
IV. The Infinity of Space and Time, 174.	

CHAPTER XI

MODERN VIEWS OF SPACE AND TIME	178
I. Scientific and Philosophical Interest in the Problem, 178.	
II. Idealistic View of Space and Time as Forms of Perception, 180; Kant's position, 180; Schopenhauer's position, 183.	
III. Anti-Intellectualistic Theories: Bergson and James, 184; Bergson's view of experience and knowledge, 185; The position of James, 187.	
IV. Realistic Theories of Space and Time, 189; The position of Samuel Alexander, 190; The American realists, 192.	
V. The Relativity Theory, 193; Its meaning and development, 195.	

CHAPTER XII

CAUSALITY	203
I. A Cause Is Not a <i>Force</i> , 203; The familiar idea of a cause, 203; Hume's criticism and account of Causality, 203; The present meaning of <i>cause</i> for science and philosophy, 205.	
II. Kinds of Causes, 207; Aristotle's classification of <i>material</i> , <i>formal</i> , <i>efficient</i> , and <i>final</i> causes, 207.	
III. Mill's <i>Methods</i> for Determining Causal Relations, 208; The <i>method of agreement</i> , 208; The <i>method of difference</i> , 209; The <i>joint method of agreement and difference</i> , 210; The <i>method of residues</i> , 211; The <i>method of concomitant variations</i> , 212.	
IV. Natural Law and the Uniformity of Nature, 213; Meaning of a <i>law of nature</i> , 214; Meaning of <i>uniformity of nature</i> , 215.	
V. Determinism in Nature, 218.	
VI. Evolution, Emergence, and Causality, 220; Mechanism and	

the earlier views of evolution, 221; Mechanism and vitalism, 222; A more satisfactory approach, 223; *Organic* explanation in more recent thought, 225; The emergent hypothesis, 227.

CHAPTER XIII

CAUSALITY AND MIND	230
I. The Problem of the Relation of Body and Mind, 230; The progress of psychology, 231; The influence of physics, 232; The influence of chemistry, 233; The influence of biology, 234.	
II. Theories of the Mind-Body Relation, 236; Behaviorism, 236; Animism and Interactionism, 129; Psychic-neural parallelism, 239; Double Aspect Hypothesis, 240; Epiphenomenalism, 240; Neutral Monism, 241; Double Language Hypothesis, 241; The passing of <i>mind-stuff</i> theories, 242; The futility of <i>causal force</i> theories, 243.	
III. Causality and Freedom of the Will, 245; Heredity and environment as determinants, 245; Freedom and <i>chance</i> , 246; The real problem of freedom, 247.	

CHAPTER XIV

KNOWLEDGE AND TRUTH	249
I. The <i>Ego-centric Predicament</i> , 249.	
II. Dogmatism, 254.	
III. Scepticism, 258; As a method and as a conclusion, 259.	
IV. Phenomenalism, 261; Kant's expression, 262.	
V. Pragmatism, 266; James, 267; Dewey, 268; Schiller, 269; Critical problems, 270.	
VI. Intuitionism, 273; The meaning of <i>intuition</i> , 273; Intuition in morals and religion, 274; Intuition and values, 277.	

CHAPTER XV

KNOWLEDGE AND TRUTH (Continued)	279
I. Empiricism and Rationalism, 279; Empiricism as presented by Locke, 280; Sensationalism of Condillac and the French school, 282; Of Hume, 283; Rationalism, 286; Of Descartes, 286; Criticism, 287.	
II. What Is Truth?, 288; Correspondence theories, 290; Coherence theories, 295.	
III. Realistic Views of Knowledge, 300.	
IV. Idealistic Views of Knowledge, 305.	

CHAPTER XVI

HUMAN VALUES	310
I. Values as a Subject for Study, 310.	
II. What Is a Value?, 313; Values as indefinable, 314; Values defined in terms of <i>interest</i> , 316; Value as an expression of universal harmony, 318.	

III. Instrumental and Intrinsic Values, 320; The problem of the metaphysical status of values, 322.	
---	--

CHAPTER XVII

✓ TYPES OF VALUES: MORAL AND AESTHETIC	324
--	-----

I. The Classification of Values, 324.	
II. The Meaning of Morality, 325.	
III. The Idea of a <i>Greatest Value</i> or <i>Highest Good</i> , 326; Hedonism, 326; Perfectionism, 329; The unity of moral values, 332.	
IV. Morality and the Social Order, 337; Judgments on social relations, 337; Social influence and moral judgments, 339.	
V. Aesthetic Values, 341; The breadth of their presence and influence in human life, 341; Aesthetic values and reason, 342; Relation to moral values, 343; Their subjective or objective status, 344; Questions in the philosophy of art, 345.	

CHAPTER XVIII

✓ RELIGIOUS VALUES: NATURALISM AND IDEALISM	346
---	-----

I. Reason and Religion, 346.	
II. What Is Religion?, 348; Comte's description of the <i>three stages</i> of explanation, and his religion of Humanity, 348; The appeal to a Superior Being, 349; Religion as an apprehension of values in the cosmic order, 350.	
III. Pragmatic Views of Religion, 351; Naturalism and the <i>Will to Believe</i> , 351.	
IV. Naturalism, Idealism, and Religion, 353; The position of Naturalism, 353; The position of Idealism, 355; The idea of God, 357.	

FOUNDATIONS OF A PHILOSOPHICAL LIBRARY	359
--	-----

LITERATURE (arranged according to subject-matter of the foregoing chapters)	367
---	-----

INDEX OF NAMES	385
--------------------------	-----

INDEX OF SUBJECTS	389
-----------------------------	-----

PHILOSOPHY

CHAPTER I

THE APPROACH TO PHILOSOPHY

"The lord whose oracle is in Delphi, neither reveals nor conceals, but indicates." This ancient saying of the philosopher Heraclitus may require rephrasing today, but its essential wisdom is not to be denied. It is possible to imagine a world so simple in its structure that in it the entire nature of all things would be revealed to the most casual observer. In such a world, there would be no uncertainty, and hence, no need for investigation, for reasoning, for hope, or for faith. Some men might be acquainted with more facts than others, but since there would be no need to exercise powers of discernment and understanding, they could not be said to differ in *wisdom*. It is possible, also, to imagine another and quite opposite kind of world, a world so alien to our minds that the nature of its objects and events would be altogether concealed from us and impregnable to all investigation. In it, there could be only uncertainty for us, and again, all inquiry, reasoning, hope, and faith would be idle. There would be utter bewilderment, and no wisdom. As it happens, we actually find ourselves in a world which is not like either of these. By merely looking, we cannot tell precisely what kind of world it is, and we may continue for a lifetime in it with no more than a rough working knowledge of its most familiar objects. We may use them daily, much as we may use a telephone without discovering the nature of its mechanism. Yet in this use and in a thousand ways, it offers to us *indications* of its nature. No one of these, taken singly, may explain very much, but each provides an

item of evidence. If put together systematically, they lead to certain conclusions.

Thus the human race, in its years of experience, has accumulated a vast mass of evidence as to the nature of things, but even so, an almost infinitely greater amount of possible evidence remains unknown. Our task, therefore, as intelligent human beings, is to systematize that which is available, and so try to discover the conclusions which it indicates—the pattern which it suggests. The “ordinary man” seldom is acquainted with a very large part even of the evidence which is at hand. But if he is to live and act as a human being, he must have some view of life, some beliefs, some principles of action. For the greater part, he usually secures these by accepting the conventional conclusions of his social groups—his race, his country, his church, his social and business associates, though he may find it desirable in varying degrees to modify these conclusions in the light of his own experience. Now conventional conclusions rightly carry a certain weight and deserve consideration, for frequently they represent a construction which has as its basis a large amount of human experience, gained through several generations. On the other hand, though these constructions may represent conclusions drawn from actual experience, it does not follow necessarily that they are the only or the soundest conclusions which might have been drawn from that same experience. Unfortunately, the choice was not always free from undue prejudices, and those who first made it were often limited to consideration of a smaller amount of evidence than we possess today. Furthermore, when many of these conventional views of our “ordinary man” are subjected to scrutiny, contradictions appear which he would have thought intolerable, had he recognized their presence. But as long as these contradictions do not make too blatant an appearance and as long as he is able to achieve a fair degree of success by living according to his accepted beliefs and principles, he is not likely to question very deeply into their intrinsic soundness.

It is when some break comes in our accustomed ways, when old principles fail us at some crucial moment, when old forms of explanation offer only ineffectual aid to the solution of new problems, or when old attitudes add weakness rather than strength to our efforts to ease new points of stress, that we begin to doubt and to inquire. The break may be one in outward circumstances of life—financial failure, hindrances to the realization of ambitions, a catastrophe of nature, or the death of someone close to us. Or the break may be one in our inner world of experience. In some degree, the latter occurs in the lives of most of us about the time we reach maturity. The explanations and attitudes of childhood must give way—a process which is accompanied by varying degrees of disillusionment and mental distress. But though most of us experience such a period, many find a quick and easy escape from it. The attitudes of childhood are simply exchanged for equally conventional attitudes of an adult world. The latter are adopted in the same spirit of easy acceptance as were the former, and the individual continues to live and act and to seek success. This last he may win, in some form long dear to his imagination. But in such a one, we will feel none of the spirit and rugged strength of a pioneering mind. He has scaled no heights, he has seen no new vistas, he has attempted no adventures of thought—and he has nothing to tell us.

Some are not so easily satisfied. If they may not know the whole truth about the universe and themselves, at least they may as well be as intelligent as possible. We would be indignant at the proposal that the fate of those charged with a crime should be determined by the random opinion of men, however certain they might think themselves, who had merely read scanty accounts of it. If a just verdict is to be rendered, the evidence examined must be as complete as possible, the examination must be by those skilled in the methods of effective and thorough analysis, and the various items of evidence must be brought together in a logical manner. Can we demand less for judgments which have to

do with the nature of the world we are living in, the validity of our knowledge and principles of action, and the significance of our purposes and interests? The honest and inquiring mind will be content with no less, and it is for this reason that the sciences and philosophy have come into being. Their specific aims and methods are distinct from one another, but their general purpose is the same: it is to seek out and investigate with care and persistence the indications which we have of the nature of things, and to systematize this evidence so far as possible in a consistent explanation.

If the problems of human living are analyzed, it may usually be found that they are but special forms of the general problem of *adaptation*. Life is a form of activity, and wherever there is life, there must be behavior which in some way brings contact between the living thing and its environment. If the behavior is fundamentally antagonistic to the environment, it will usually be thwarted and the life activity behind it destroyed. Hence, survival implies some degree of harmony. But success for the living being and the perpetuation of its kind require that this harmony be as complete as possible—the more complete it is, obviously, the fewer of the forces surrounding the organism will be, for it, destructive forces. We must not forget, however, that *adaptation* is a very broad term, and one applicable to all levels of life-forms. This term usually suggests to our thought primarily a physical relationship. This is not strange since the survival of life on the earth depends upon ability to meet the requirements and exigencies presented by the environment of physical nature. But here, adaptation has not been altogether one-sided in its consequences. Not only has man, if we consider him alone, become better fitted to his environment through the ages, but by his efforts the environment has been adapted in no small measure to his needs.¹ The

¹ In discussing these two aspects, Professor Dewey writes: "Even a clam acts upon its environment and modifies it to some extent. It selects materials for food and for the shell that protects it. It does something to the environment as well as has something done to itself. There is no such thing in a living creature as mere

problem of securing roots to eat and the meager comforts of a cave to dwell in was enough to tax the time and ingenuity of primitive men. But men have gained in power and understanding, and their natural environment has been reordered from jungle and desert to productive farm. Swamp-lands have been made tillable by drainage and arid lands fertile by conveying water from distant mountains and rivers. By selection and cross-breeding, plant and animal stock have been altered to better suit man's needs. Despite these familiar changes in the direction of mutual adaptation of man and his physical environment, the problem of securing the physical necessities and the comforts of life remains an urgent one. It has not been removed, but it has been sufficiently reduced to allow other interests to develop. Man has gained the opportunity to discover other aspects of his being, and to feel their need for adaptation within an appropriate environment, that they too may have active expression.

Man is not only a physical body, but he is also a social being. It now seems improbable that a time ever existed when men lived in complete independence of one another. On the contrary, group solidarity was greater among primitive folk than it is in civilized society. But just as the primitive man took a cringing attitude before the powers of the physical world, so he accepted a position of almost complete subservience to the will of his group. Tribal law was absolute, and tribal life usually allowed a very narrow margin of individual independence. With iron hand, custom dictated religion, occupation, and the group from which the primitive man might marry. Individual property rights were seldom admitted—indeed, the very idea of a personal *right* of any kind was generally foreign to primitive thought. Thus, though men may have lived always in groups, early society shows scant trace of that mutual respect and good-will, of that easy spirit of “give and take,” which are the better

conformity to conditions, though parasitic forms may approach this limit.”—John Dewey, *Reconstruction in Philosophy*, pp. 84-85. Published by Henry Holt and Company, New York, 1920.

characteristics of our modern life together. Unfortunately, it must be admitted that they are not always predominant features of contemporary social intercourse, but at least there has been vast improvement—and this improvement represents man's increasing capacity for social adaptation. Furthermore, the bounds within which social adaptation has been accomplished have widened from the tribal group, which thought of itself as one family, descended from a common mythological totem ancestor, to the nation, and even to the world. In trade and in the sciences, arts, and letters we enjoy world-intercourse. Wars may still exist to warn us of the incompleteness of our present state of social adaptation, but at least for the greater part of the time, it is unlawful to kill or rob any *foreigner*—provisions which would prove quite baffling to the primitive mind.

Social adaptation, however, implies more than a harmonious relationship between ourselves and our neighbors, or even our contemporaries. It implies also an harmonious relationship with all mankind—the dead as well as the living. Each generation receives many of its attitudes, institutions, and ideals from those which have gone before. Though it pride itself upon its emancipation, it is never independent in the fundamentals of life. Its language, its literature, its art, its science, its religion, its law, its economic system, its government—all of these it holds in common with men of earlier ages, or if it make fundamental changes, these changes themselves and its very spirit of emancipation are possible only because of the nature of the social order which has prepared and made way for them. We may not do or think what our ancestors did in certain particulars, but what we actually do and think is not independent of them. It does not spring from the void, but comes as a development from what they have already done and thought. This fact, though commonplace enough, suggests the necessity of understanding the spirit of other ages, and what the world seemed to them, if one is to orient oneself in any adequate way in one's own. Through the study of earlier literature and art,

of the history of social institutions and events, of the course of science, of religion, and of philosophy, men have come to seek fuller understanding of mankind and of their world, and so a fuller measure of social adaptation, with its consequent power. The truest and the most revealing history of humanity, moreover, is not that which speaks primarily of men's actions or of the accidents which have befallen them. The truest history is that which discloses the ideas, the purposes, the ideals which have constituted men's views of life and their motives of action.

The aspects of man's nature are not limited to the *physical* and the *social*. There remain in addition, what we commonly call the *intellectual* and *spiritual* aspects. These are not independent of the physical and the social, but neither are they identical with them. Just as man must have a physical environment if he is to live and act as a physical being, and an environment of people if he is to live and act as a social being, so also he requires an intellectual and spiritual environment if he is to live and act as an intelligent and a spiritual being. What is an intellectual or a spiritual environment? Essentially, it is a situation in which things have *meanings* and *values*. A mind views things chiefly in terms of their meanings. We may perceive and be aware of the physical characteristics of objects—their size, shape, color, or weight—but if they have no meaning to us, there is practically nothing which we can “think” about them. Indeed, if anything were utterly meaningless to us, we certainly could think no more regarding it than that *something* existed—and it is doubtful if even being thought to be a *something* would not convey some meaning. A world which had no meaning whatsoever would be one in which a mind must feel a complete alien. Its language would be one of altogether unintelligible signs and motions. Similarly, a world in which nothing possessed any value—any truth, any beauty, any utility, any goodness—must be an altogether foreign world to spirit. In such worlds, man might live as one of the lower animals, but in his life there could be neither

intelligence nor appreciation. Adaptation of mind and spirit would be impossible—they would have no point of contact with the environment, hence, no possibility of expression. But our actual world seems not to be of this kind. In it, apparently, things do have meanings and they do have values. How these come to be there and what may be their status are questions to be considered further, but for ordinary experience the world seems devoid of neither. The meanings and values of things seems to constitute an aspect of their very natures, somewhat as mind and spirit analogously constitute an aspect of man's nature. A world of such objects seems to be the environment of spiritual beings. That is, to say that a human being possesses mind and spirit is equivalent to saying that there are relations and interactions between this being and his environment which for him, at least, have meanings and values as their basis. These might be impossible were it not for other relations of a physical kind, but on the other hand physical relations could have no importance without them. A relationship without meaning or value could make no difference.

One may hold any of various views as to the origin of the human mind and spirit. But we must all agree that mental and spiritual adaptation to the world has been a slowly evolving process. Primitive man found comparatively little harmony between the meanings and values of things and his own thoughts and purposes. His world seemed a capricious one which he could neither predict nor control effectually. Cringing before mysteries, abasing himself before imagined deities who were even poorer than he in reason and virtue, made timid by superstitious fears, he brought himself into subservience to what he supposed to be the order of nature. Slowly science and philosophy arose and made their way among men. Systematically they cleared away false mysteries and superstitions. Nature, in reality, was disclosed as being not capricious but orderly in its behavior. Mathematics, the most abstract and purely rationalistic branch of human thought, proved to be the most

valuable of all the means at man's disposal for interpreting the physical world. In the social realm, organizations and institutions gradually ceased to represent mere custom alone, and became active agencies, existing for the achievement of definite and intelligible purposes, such as *justice* and *liberty*. But this twofold task of adaptation, bringing the individual mind and spirit into harmonious relationship with the meanings and values which its environment may yield to it, is still far from complete. Hence crime, social discord, and personal unhappiness continue with us.

There is also a larger phase of this problem of adaptation of mind and spirit. Their environment does not stop with narrow bounds, but includes the entire universe. What, we ask ourselves, is the significance of life and the meaning of a world like this? Have they *any* meaning or purpose? "It is owing to their *wonder*," said Aristotle, "that men both now begin and at first began to philosophize." To live in a world without curiosity as to what kind of world it really is, should be impossible, it would seem, for any but a totally unimaginative and very dull creature. The problem, moreover, is not one which requires merely a further investigation of our environment on a cosmic scale: it calls, also, for examination into the nature of ourselves. We possess ideas and the powers of thought, feeling, imagination, and will. What are the nature and value of these? Psychology may tell us much about the processes of thinking, but what is our human thought worth? Can we really *know* anything with certainty? How far are ideas of external things reliable? Are those things which we suppose to be *external* possibly only ideas in our own heads? Is there any way in which we may be sure that there really is a world outside of and independent of our thought? If so, how far are our ideas reliable expressions of that world? Here again we have only bits of evidence with which to work. What is the real nature of this evidence and how do its parts fit together? What can we learn from them as to the nature of things-themselves?

However, when we turn to science and to philosophy, seeking aid in the answering of such questions, it is not likely to be with minds inspired only by wonder. If our first interest is not solely an academic one, it is likely to be the result, as we have said, of some break in the confidence which previously was felt in accepted beliefs and familiar ways of explaining things. Some new problem arises or some crisis calling for thought or action. We try to deal with it in an accustomed way, but this proves futile. The only hope of solution we conclude, lies in the direction of fuller understanding. "Philosophy," Sir Henry Jones has said, "has no meaning for men at ease; its synthesis has no vitality except where experience is baffled by its own discrepancies." Yet life is an immediate fact for us, not a fiction. Whatever its ultimate importance in the universe or the real nature of the universe itself, whatever the significance of our knowledge and values, our standards and ideals, for each of us life is a "going thing," demanding that choices be made, that actions be directed, and that results be achieved. The demands of thought for clarity of understanding, moreover, and of the spirit for beauty and goodness, are no less imperative or persistent than are those of the body for food and raiment. We must think and act, employ standards of judgment and pursue goals, long before we are capable of inquiring deeply into the nature of the world in which we must act or into the real worth of the purposes to which our efforts are devoted. Life is a form of activity, and to be alive is to be active in some way. To live as a being possessing *mentality* is to be active in a particular way—that, namely, of organizing behavior with a view to securing *desired ends*.¹ But there remains yet a higher form of activity than the seeking of ends or the choosing of means. It is that of determining what ends are most worth seeking. The intelligent man does not search merely

¹ "The pursuance of future ends and the choice of means for their attainment are thus the mark and criterion of mentality in a phenomenon."—William James, *Principles of Psychology*, Vol. I, p. 8. Published by Henry Holt and Company, New York, 1890, 1918.

for effective means of attaining his ends—also, he selects his ends on the grounds of some superior value that renders them worthy of his efforts. His problem is not only that of getting what he *desires*; it is that of determining what is genuinely *desirable*.

So numerous and contradictory are our desires and needs that we may not hope to satisfy all, but must choose those to which we shall devote our greatest effort, those which are to receive secondary attention, and those which are to be rejected altogether. To make such a selection requires some *standard* by which each desire may be compared with others, its value determined, and a choice made. But where is this *standard* to be obtained? The possible sources are numerous: the standard of the social group to which we belong may be accepted; or that offered to us on the basis of religious authority; or that presented by a philosophical school. Usually we are reared in the knowledge of some one standard, which we early learn to regard as true and final. But whether accepted in implicit faith or later on the basis of critical examination, the acceptance is possible only because of important assumptions, which may or may not be consciously recognized. The religious authority is assumed to be an articulation of divine wisdom, or the social order is looked upon as the best attainable, or the philosophical system is considered a *true* account of man and the real world, or some particular good is taken to be the greatest good for man. Nature is assumed to be a purposeless mechanical order, or to express a divine love or a rational purpose in its structure and activities. Man is assumed to be of intrinsic significance or to be one among many results of the productive activities of a meaningless world. The external world is taken to be what it appears to our senses, or, less frequently, it is regarded as something unknowable.

The discovery of unsound assumptions, whether with regard to the nature of the physical universe, or of human society, or of our own nature as individuals, and their removal from common thought is a slow process. Philosophy

possesses no touchstone for the detection of truth and error, but must rely upon the persistent efforts of human thought. It is, as William James' familiar description said, "an unusually obstinate attempt to think clearly and consistently." But that with which we must deal is the whole fabric of human thought, in which are interwoven the beliefs and customs, the ideas and assumptions, of scores of generations of men, and it is no simple task to discover and remove the weaker threads from the texture. Moreover, the task of philosophy is by no means merely critical and analytic, but also constructive. Something which has been tested and found more adequate must supplant what is taken away. Hence the philosopher's search is not for error alone, but also and primarily for truth and value. Such great philosophical sceptics as Socrates, as Descartes, or as Kant, recognized that merely to doubt the ordinary assumptions of daily life or the more carefully chosen assumptions of the sciences is not to solve the problems of human thought and action. Doubt is but a testing of the foundations, leading to a greater degree of security in future construction.

Philosophy, it scarcely need be said, does not represent the only means by which the assumptions on which we think and act may be tested. Scientists are constantly engaged in an effort to eliminate false assumptions from their work, as, indeed, is every intelligent investigator in any field. The uniqueness of the philosophical method lies in its direct and complete reliance upon *reason*. One's opinions may be true, as William James suggests, "by guesswork or by revelation. What distinguishes a philosopher's truth is that it is reasoned."¹

Any investigation and any conclusion may be a philosophical one if in it there is presented the work of one who relies upon the powers of reason, and so concerns himself with the consistent relation of this particular investigation or conclusion to the whole unified body of true knowledge.

¹ William James, *A Pluralistic Universe*, p. 13. Published by Longmans, Green and Company, New York, 1916.

"The problems of philosophy," said President Hibben, "are, in fact, the problems of life, the burden and mystery of existence, the origin and destiny of man, the relations which he sustains to the world of which he is a part, and to the unseen universe which lies around him." It is not what a conclusion is about that makes it philosophical, but the way in which it was reached, and the attention which has been given to placing it coherently in the whole order of human experience. "You philosophize when you reflect critically upon what you are actually doing in your world."¹

Philosophy offers no ready-made conclusions. It insists upon no dogmatic creeds. It asks of its followers but one thing—a steadfast confidence in the powers and values of reason. They may accept or reject the teachings of the classic philosophers, as they may accept or reject the views of contemporary schools and thinkers. "In all ages," William James has said, "the man whose determinations are swayed by reference to the most distant ends has been held to possess the highest intelligence." To live intelligently demands a coherent relating of actions and purposes—that is, it demands a *pattern* which actions may follow. Such a pattern must represent some theory as to the nature of ourselves and the world in which we are living. No one, however, is a philosopher because he accepts any particular theory. Far from being but a warfare between opposing systems, the essential nature of philosophy is found in that spirit of critical inquiry, that insatiable eagerness for intellectual exploration which all true philosophers share in common, even when that very spirit leads them to widely varying conclusions. In philosophy, as in all ordinary activities, "a theory we unquestionably must develop. But there is something more; something more, and yet something inseparable; not behind or beyond the theoretical structure, but rather its informing life and spirit. And this something

¹ Josiah Royce, *The Spirit of Modern Philosophy*, p. 11. Published by Houghton Mifflin Company, Boston, 1892.

more is our *attitude* to experience.”¹ This attitude is one of trust in the might of free, persistent, and unprejudiced thought. The business of living is not trivial. What is to be gained by practicing deceptions upon ourselves with regard to it? Reason may not be the only way to truth, but it is an important way. Systematically and rigorously philosophy would examine assumptions and conclusions, purposes and modes of action, in the confident belief that such as are worthy of acceptance will be but strengthened by the examination, while those which cannot endure investigation may as well have their falsehood unmasked.²

¹ Bernard Bosanquet, *Principle of Individuality and Value*, pp. 1-2. Published by The Macmillan Company, New York, 1912.

² References to literature dealing with subjects considered in this and subsequent chapters will be found at the end of the book.

CHAPTER II

THE MEANING OF "EXPLANATION" FOR THE SCIENCES AND FOR PHILOSOPHY

I. SCIENTIFIC EXPLANATION

In common parlance, the term *science* frequently is employed as a kind of group designation for the various natural and social sciences. When used more accurately, it refers not to the collective work of these, but to their *way* of working and to their objectives. The materials with which the specific sciences deal differ widely. They may be rocks or stars, plants, living organisms, or social institutions. It is not their materials, therefore, which unite various investigations as *sciences*, but the method which they commonly employ in dealing with that material. Viewed in this more general and more correct sense, science represents the attainment of knowledge through *exact observation* and *logical arrangement* of facts. Clearly, this must be the procedure of all intelligent inquiry. Conclusions of whatever kind, if based on no facts at all, or on confused and inexact observation, can claim no validity. Equally, conclusions reached through illogical interpretation of the facts involved will be unreliable. Philosophy, as a branch of human knowledge, must follow this general method. It therefore must be regarded as a branch of scientific thought, when *science* is taken in this larger significance. The question of how philosophy is related to the *particular* natural and social sciences, however, is a somewhat different one, and before we turn our attention to it, it may be well to recall certain major characteristics of the general procedure followed by these sciences in their work. In many respects we shall see that these but extend and systematize the methods of ordinary common-sense knowledge.

i. Observation.

When relatively little is known about a subject, it often seems easy to construct theories which will serve as adequate explanations. Knowing little about the real magnitude of the heavens, it was easy for the earlier ptolemaic astronomers to devise a fairly simple explanation by means of arrangements of circles. Knowing little of the complex structure of the human body, it was not thought impossible in early medical science to discover some "cure-all" for its ailments. "Gil Blas, in Le Sage's famous romance, finds it possible to become a skilled physician in the twinkling of an eye, when Dr. Sangrado has imparted to him the secret that the remedy for all diseases is to be found in bleeding the patient and in making him drink copiously of hot water."¹ Even as late as the time of Bacon, it was not thought preposterous for a single man to "take all knowledge for his realm." But an increasing knowledge of facts caused additions and complications in ptolemaic astronomy, until finally its entire structure was ready to fall of its own weight before the relatively simpler account of Copernicus. So in the other fields of knowledge, earlier theories proved ill-adapted to meet the necessity of incorporating new facts as they were discovered. Increasingly, it became clear that if satisfactory theories were to be formulated, the actual facts which they were supposed to explain should be known as fully as possible. To such investigators as Aristotle, this appeared obvious, as of course it does to us, but only in more modern times were scientists generally sufficiently impressed with its importance to attempt anything approaching thorough and systematic observation of their material.

The attention given to this part of his task by the modern scientist, his effort to include as wide a range of relevant data as possible, his persistence in making and checking observations taken, if possible, over a period of time and by numerous observers—all of this is too well known to

¹ G. S. Fullerton, *An Introduction to Philosophy*, p. 9. Published by The Macmillan Company, New York, 1906, 1920.

require reiteration. Darwin's account of his own work in arriving at the theory of *natural selection* offers a graphic illustration. Having returned to England in 1837, after a five year voyage, it seemed to him, he tells us, that: "By collecting all facts which bore in any way on the variation of animals and plants under domestication and nature, some light might perhaps be thrown on the whole subject (of selection). My first note-book was opened in July, 1837. I worked on true Baconian principles, and without any theory, collected facts on a wholesale scale, more especially with respect to domesticated productions, by printed inquiries, by conversation with skilful breeders and gardeners, and by extensive reading. When I see the list of books of all kinds which I read and abstracted, including whole series of Journals and Transactions, I am surprised at my own industry. I soon perceived that selection was the key-stone of man's success in making useful races of animals and plants, but how selection could be applied to organisms living in a state of nature remained for some time a mystery to me."¹ Having carried on this elaborate collecting of facts, he sought a law which would account for them in a consistent manner—some pattern into which they would fit. It was not until 1842, or four years after he had first gotten the idea of what this law might be, that, as he says, "I first allowed myself the satisfaction of writing a very brief abstract of my theory in pencil in 35 pages; and this was enlarged during the summer of 1844 into one of 230 pages, which I had fairly copied out and still possess." An abstract from his manuscript was finally printed in 1858, and his classic account of his theory, *The Origin of Species*, was not published until 1859—twenty-two years after the task of collecting facts had been undertaken in a definite way and twenty-eight years after he had sailed on the voyage of exploration. The final theory was a product both of observation, which sought the most exhaustive knowledge of facts obtainable, and imagination which grasped the

¹ *The Life and Letters of Charles Darwin*, Vol. I, p. 83.

pattern as a whole, within which these facts could be brought harmoniously together.

2. Systematization.

No fact, viewed by and for itself alone, is a *scientific* fact, for scientific knowledge always has to do with the order in which, or the law according to which, things are connected with one another. If science concerns itself with the observation of particular objects and activities, yet it is not these particulars which interest it, but the general principles which their nature or activity expresses. Thus, it may be said that scientific investigation in general assumes that things are connected with one another, and further, that these connections are of such a kind that the mind can understand and systematize them by its processes of rational thought. In this process of systematization, by which a particular fact is related to other facts within an *order*, several stages are to be noted, particularly those of *enumeration*, *measurement*, and *logical synthesis*.

3. Enumeration.

There is no simpler way of putting things together in an order than by counting them. When we count things, we employ a numerical system, in which numbers are related in a *series*, preceding or succeeding one another according to a fixed law of the series. Clearly, the objects which are to be counted must be related in some manner analogous to this, or the numbers which stand as symbols for them would be meaningless. That is, unrelated things cannot be counted—we may speak of two, twenty, a hundred, or a thousand with any concrete meaning only if the numbers represent a succession of similar things. At least these things must have one aspect in common, with reference to which they may be *counted together*. Thus, a census counts *people*, a librarian may count *books*, or an agricultural report may state the results of counting bushels of *corn* or heads of *cattle*. But enumeration requires both diversity and unity. There

must be more than one of whatever is being counted, yet these things must be of one kind, or members of one class.

We may foresee that difficulties in correct enumeration will arise from errors in classification. If individual facts or items are put together in the wrong way, statistics which show the numbers of members in the various classes, of course, will be fallacious. A further source of error arises when groups of facts are inferred to be related because numerically they correspond or vary with one another. If the number of illiterate persons is in fairly close ratio to the number of criminals in our cities, it may indicate that illiteracy is a contributing cause of crime, or it may be that both illiteracy and crime are due to some third cause, such as economic conditions of a considerable segment of the population, or again, the correlation may not indicate any actual relationship at all. Professor Cohen gives us an illustration of the last situation: "For a number of years the membership in the International Association of Machinists shows a very high correlation (86 per cent) with the death rate in the state of Hyderabad. If instances of this sort do not come to our attention more often it is because we do not look for them. We generally look for correlations where we have some reason to suppose that there is real connection."¹ Clearly, enumeration and apparent correlations based upon it are not in themselves sufficient basis for looking upon facts as systematically related to one another. In many popular superstitions, we see the consequences of assuming that correlations always show causes. It is entirely possible, for example, that one or even twenty black cats may cross one's path on the day when a misfortune befalls him, yet have nothing whatsoever to do with it. Yet who of us would not feel a little greater interest in, if not actual conversion to, the ancient belief, were *twenty* actually to cross his path?

¹ Morris Cohen, *Reason and Nature*, p. 92. Published by Harcourt, Brace and Company, New York, 1931.

4. Measurement.

If general enumeration in itself is not sufficient to establish interconnections between things, its exactness in many cases may be greatly increased by more careful methods of measurement. Counting and measuring may be regarded as constituting together the primary means of securing exact scientific descriptions. Moreover, far from outgrowing these methods, they appear to become increasingly useful as a particular science progresses towards its ideal—which for it, as a *science*, is that of becoming *exact* in its investigations. As any science becomes more *exact*, it must come to deal with its material more and more fully in mathematical terms. So far has this gone in the case of such studies as physics that certain scientists tend to look upon the realm with which exact science is concerned as a kind of shadow world, composed of mathematical relations quite abstracted from the objects and events of every-day life. For example, Professor Eddington¹ writes in popular vein: "Let us then examine the kind of knowledge which is handled by exact science. If we search the examination papers in physics and natural philosophy for the more intelligible questions we may come across one beginning something like this: 'An elephant slides down a grassy hillside. . . .' The experienced candidate knows that he need not pay much attention to this; it is only put in to give an impression of realism. He reads on: 'The mass of the elephant is two tons.' Now we are getting down to business; the elephant fades out of the problem and a mass of two tons takes its place. What exactly is this two tons, the real subject-matter of the problem? It refers to some property or condition which we vaguely describe as 'ponderosity' occurring in a particular region of the external world. But we shall not get much further that way; the nature of the external world is inscrutable, and we shall only plunge into a quagmire of

¹ Plumian Professor of Astronomy in the University of Cambridge. His popular writings are always interesting, but are not always representative of the general view of the best scientists.

indescribables. Never mind what two tons *refers* to; what is it? How has it actually entered in so definite a way into our experience? Two tons *is* the reading of the pointer when the elephant was placed on a weighing-machine. Let us pass on. ‘The slope of the hill is 60° .’ Now the hillside fades out of the problem and an angle of 60° takes its place. What is 60° ? There is no need to struggle with the mystical conceptions of direction; 60° is the reading of a plumb-line against the divisions of a protractor. Similarly for the other data of the problem. The softly yielding turf on which the elephant slid is replaced by a coefficient of friction, which though perhaps not directly a pointer reading is of kindred nature. . . . And so we see that the poetry fades out of the problem and by the time the serious application of exact science begins we are left with only pointer readings. . . . The whole subject-matter of exact science consists of pointer readings and similar indications.”¹ In certain particulars, some may regard this as an over-statement of the place held by metrical elements in physical science, but it is not an over-statement to say that these elements are fundamental to the work of exact science, or that all sciences strive to be *exact*. Vague terms, such as hot and cold, hard and soft, large and small, may be useful in ordinary discourse, but they are too vague to hold great value in scientific description. Here they must be replaced by definite and comparable measurements. Indeed, it would not be too much to say that we may estimate quite accurately the state of development of any particular science by noting the exactness which it has achieved in its measurements. In physics, chemistry, and astronomy a high degree of exactness has been attained. In biology, geology, and botany a lesser degree has been reached, and yet less in the relatively new science of psychology.

When diverse material is dealt with in terms of its *particular* items, it is exceedingly difficult to make comparisons

¹ A. S. Eddington, *The Nature of the Physical World*, pp. 251–252. Quoted by permission of the publishers, The Macmillan Company, New York, 1928.

which are exact. We may recognize that one thing is larger or colder or heavier than another, but we must learn just how much larger, colder, or heavier, and this is accomplished, of course, by means of measuring rods, thermometers, scales, and like instruments. In using these devices, we find not only the exact relationships in which the particular objects stand to one another, but also we locate them in series. That is, we find their exact relationship to *all* objects which can be similarly measured. Having found their place in the *series* of *all* extended, or *all* ponderous objects, we shall be enabled to deal with them in ways which otherwise would not be possible. Indeed, *measuring* may be defined as discovering exactly where anything belongs in the whole numerical series which represents the relationship of all objects everywhere that possess its kind of quantity. Thus one may find the weight of a grain of sand, and thereby relate it in a numerical series of weights to that of a boulder, or (by estimation) to that of a distant star or nebula.

No measuring instrument is perfect. In many cases, too, they are subject to slight alterations due to such factors as temperature. In any particular observation or measurement there are further local conditions to be taken into account. In addition to these, there are variations and errors in the observer's own keenness and accuracy of perception. Any of these factors may be misjudged or altogether overlooked, causing error in the result. Whether due to these or other causes, it has been noted that measurements, however carefully taken, will vary slightly from one another. From these slightly divergent readings, it is customary for scientists to compute what is to be taken as the *correct* measurement. This "correct" measurement may be a balance between differing readings, but it need not be the same as any one of them. It is calculated on the assumption that variations between measurements are due to some factor in the measuring, not to an actual change in the objects measured. If it might not be assumed that the ob-

jects measured remain the same, or that they vary only in an orderly (and measurable) way, we should be obliged to give up the hope of discovering *laws*, and so the possibility of any exact science whatsoever. In other words, our ordinary experiences do not show us an invariable order in nature—but everywhere variety, change, uncertainty. Our most accurate measurements, likewise, fail to show absolute uniformity. "It is a general consequence of the approximate character of all measurement," says Professor Bridgman, "that no empirical science can ever make exact statements." But the sciences, in order to carry forward their work of systematization, must assume absolute order in the physical world; there can be no place for chance and haphazard variations in the subject-matter of exact science. The investigator may not always discover the nature of this absolute order; also, he may believe that he has discovered definitely unpredictable or "free" movements, but even these latter are always found to be governed by more general laws. For example, the activities of the individual electron seem to be unpredictable. This may be because of factors guiding those activities which we have not discovered, or it may be that they are quite ungoverned and "free." But even here, it is known that movements must follow one of several possible definite routes—they are not haphazard. They must shift according to certain *quantum numbers*. And with care the probability of their movements may be calculated. Where there is probability, there must be law and system.¹

¹ In formulating his principle of indeterminacy in nature, Professor Dirac says: "When an observation is made on any atomic system . . . the result will not in general be determinate, i.e., if the experiment is repeated several times under identical conditions, several different results will be obtained. If the experiment is repeated a large number of times, it will be found that each particular result will be obtained a definite fraction of the total number of times, so that one can say there is a definite probability of its being obtained any time the experiment is performed."

For discussion of indeterminacy and its philosophical significance, cf. J. E. Boodin, *A Realistic Universe*, Preface to second edition, pp. xxvii ff.; M. R. Cohen, *Reason and Nature*, p. 159; R. F. A. Hoernlé, *Studies in Contemporary Metaphysics*, pp. 157, 187 ff., 195; A. S. Eddington, *The Nature of the Physical World*, pp. 220, 306.

5. Logical Synthesis.

The sciences have advanced by means of two forms of activity: (1) the discovery of new facts, and (2) the discovery of systems by which the facts already known may be so related as to give new knowledge. The epochal advances of thought in the fields of the special sciences usually have been introduced by discoveries of the second type, *i.e.*, of new systematic schemes for relating facts already known. Such was Copernicus' system, by which the well-known motions of the planets were related in a new way and with a new meaning. Such was Newton's theory of gravitation, Darwin's systematic scheme of natural selection, the molecular, atomic, and electronic theories of physics and chemistry, the cell and bacterial theories of biology, the theory of geologic periods, and the recent relativity and quantum theories.

These and other systematic schemes employed by the sciences in their work of explanation may properly be called "discoveries" not in the sense, of course, that they are observed as objects might be in the external world, but in the sense that they are discovered by the mind of the investigator in his search for a satisfactory way of relating his findings. They are discoveries of thought and imagination. But usually there are many possible systems by which known facts may be correlated. On what basis may we say that one of these systems is *better* than the others? Why do we give up an older system in order to accept a newer? Seldom is it because we can *perceive* its superiority directly by looking at the external world. But we believe that there are certain requirements which a system of explanation should meet, and this particular system seems to meet these requirements more successfully than do its rivals. For our purposes, an elaborate statement of such requirements is unnecessary. Fundamentally they are two: (1) other things being equal, the simplest system may be accepted as the best; (2) to be acceptable, a system must be self-consistent and consistent with all established facts. These two requirements are

usually designated respectively: (1) the principle of *parsimony*; (2) the principle of *coherence*.

(1) *Parsimony*. If two or more systems offer equally satisfactory means for accounting for all known relevant facts, either may be true, or later facts may show that both are inadequate. But scientific work cannot wait until all evidence is in—doubtless in the case of most scientific problems all evidence never will be in. A choice must be made, even though a later change may become necessary. But between two systems which seem equally capable of accounting for the known facts, how is any choice to be made? The answer generally accepted to this question was formulated by an English Franciscan, William of Occam (lived about 1280 to 1347). For all *explanation*, he made the rule: "Entities are not to be multiplied beyond need." That is, of two systems otherwise equally good, accept that which requires the simpler assumptions. There is no advantage to be gained from a complicated explanation when a simpler one would account for the same facts in no less satisfactory a manner. Thus, the Copernican system was accepted chiefly because it explained the known facts of astronomy in terms of a much more simple geometrical scheme than the then highly complicated ptolemaic system. "The world as science conceives it is always the most unified and harmonious system that can be established consistently with the known facts. To explain a single fact is to relate it to another; to explain a mass of facts is to derive them from the fewest ultimate assumptions."¹ However, simplicity is never to be sought at the cost of neglect of any established fact.

(2) *Coherence*. We have seen that the sciences are concerned primarily with the systematic organization of facts, but what is the nature of a *systematic* organization? What is a scientific *system*? First of all, we may note that it is never simply a sum-total of known facts, and it is never

¹ E. A. Burtt, *Principles and Problems of Right Thinking*, p. 234 (second edition). Published by Harper and Brothers, New York, 1928, 1931.

constructed by merely adding facts together. It is the basic nature of a scientific system to bring together its various members by revealing some *order* in which they stand related to one another. This order, we have said, is not to be discovered by looking at any one of these members in isolation from the others. It does not exist as one of the group of things which it unites, but a *principle* of order pervading all. The principles of the system are expressed by each of its member-units, but no one of these units can give such expression, if isolated from the others. The principles themselves, or the *system*, are something abstracted from the mere collection of the things systematized. They are in a sense *above* the particular items—they have to do with their common aspects, their interrelations, their nature as a *whole*, within which each exists as a part. The manner of explanation here involved has been clearly phrased by Whitehead and Russell: *Whatever involves all of a collection must not be one of the collection.*¹

Since a scientific system is thus an abstract order or form, its value in representing the actual relationships between facts as they exist in the external world may prove difficult to discover. We cannot perceive directly how external things are related, but must infer it from their appearances and activities. Frequently, there are numerous ways in which they might be connected, yet appear and act in the way they do. Each of these diverse ways offers the basis for a possible system of explanation. But how are we to know which is the *right* system? Which represents the real order of connections? Men have believed, for example, that certain diseases are caused by the presence of *demons*, and have constructed an elaborate system of explanation in these terms. Other men have thought that the same diseases are caused by the four *humors*, or fluids, of the body getting out of their proper balance, and likewise have constructed systems of explanation and treatment on this basis. We may

¹ Whitehead and Russell, *Principia Mathematica*, p. 427. Published by the Cambridge University Press.

explain the same illness systematically in terms of a theory of *bacterial action*. How is the scientist to judge which of these is the soundest system of explanation? By physiological investigation of the facts, he may be able to determine that the theory of *humors* just does not coincide with observable facts about the human body—that such a theory is *inconsistent with the facts*. On the other hand, it would be more difficult to disprove the theory of demons in this way, for presumably they may be invisible. He has a large amount of convincing evidence in favor of the belief that bacteria do cause disease, but this in itself would not disprove the work of the demons. Perhaps bacteria multiply when demons are present, and though quite innocent, yet by this multiplication give the appearance of causing the disease. Or perhaps both are causes—so that in some cases illness is due to bacteria, in others to demons. No scientist, we may be sure, would hold such views, but how does he escape them? If on no other grounds, the last theory might be eliminated on the basis of parsimony—why should we believe in both forms of explanation when the bacterial theory alone is sufficient to account for the facts? But further, the account in terms of demons is relegated to the past and to regions where scientific knowledge has not developed, because of its *inconsistencies*: (1) It is inconsistent with our knowledge of physical nature. That knowledge is not complete, but as far as it has extended, it displays order in natural processes and not the capricious activities of such supernatural mischief-makers. (2) Belief in such beings would be inconsistent with the primary and fairly well authenticated methods of scientific explanation. These methods assume law and order. They can take no account of that which cannot be subjected to law. The work of a demon, if such existed, could not be material for scientific study, since it would not be subject to the general and uniform laws of nature. (3) By definition, a demon is a being who by nature is the enemy of law. Being completely evil, he would be lawless, and being lawless, his nature would be essentially inconsistent. Thus demons are

ruled out, but not on the grounds that observation proves they do not exist—for if they did, they might not be perceptible. Rather, they are ruled out because of their inconsistency—a systematic account in terms of demons is not coherent in itself, and it is not coherent with other established facts about the world.

Were this test of consistency or coherence useful only in such extreme cases, it might be unnecessary to call attention to it, but in fact it is the most common as well as the most absolute requirement made of all scientific systems. Indeed, it is because the ordinary views which were held about the world proved inconsistent that the sciences first arose. Men were inspired by the idea that the world, as it really is, must be consistent in its order or it would cease to exist and operate as one world—genuinely contradictory things cannot exist and work together. Self-contradictory natures are impossible, for if their elements are contradictory, how could they unite to constitute *one* thing? Now if the real world must be coherent and orderly, it follows that only coherent views about it can be true. Any systematic account which lacks this characteristic of self-consistency and consistency with all established facts, therefore, must be false, at least in part, and unacceptable.

It is significant that this primary demand of scientific explanation for coherence is based not upon observation, though it may be substantiated by observation, but it is based on logic. The demand for consistency is a demand of the *mind*. The human mind, with its capacities for rational thinking, cannot conceive a world which is self-contradictory. It insists that such a world could not exist. But it insists upon this because the laws of its own nature make the thought of such a world impossible. By observation alone, the scientist is left without sufficient grounds to demand such consistency in a description of nature. He has not examined all of nature, and hence, cannot be certain on the grounds of observation that in some distant and unexplored quarter nature actually may not be inconsistent. But if the laws

of logical thought are baseless, then all knowledge is baseless and all investigation is useless for us. In the attempt to secure any systematic explanations whatsoever, the scientist must place his confidence in the power and value of thought, and in consequence he must demand that these explanations shall obey the laws of logical thought.

6. Limitations of the Human Investigator.

Although negative, another characteristic of the work of the sciences must be mentioned, because of its importance to a comparison with philosophical thought. The sciences do not attempt to deal with the general problem of human knowledge. They do seek to eliminate from their accounts all that has crept in through the prejudices or the limitations of a particular scientist. In the case of observation this is accomplished by comparing the findings of numerous observers, and by taking observations under a wide variety of circumstances. Calculations, particularly when they are in mathematical form, may be checked—a reason for the special advantage of employing mathematical forms where they are possible. But all observers are human beings with human ways of perceiving and thinking about things. The use of instruments may alleviate many errors of observation and measurement, but instruments are tools which must be used by human beings, and the results which they show must be interpreted by human minds. For the sciences, as Professor Whitehead says, "Nature is that which we observe in perception through the senses."¹ If all human observers have certain characteristics which lead to misinterpretations, they might distort the thought of the scientist no less than of other men. If all men were born color-blind, who would know that he was so? The spectrum might need to be interpreted somewhat differently, but doubtless this could be done in some way consistent with the more limited range of our experience. As it happens, we are not all color-blind, and those who are not, being in the vast majority, "correct"

¹ A. N. Whitehead, *The Concept of Nature*, p. 3.

the errors of those who suffer this misfortune. But there may be other limitations, as certainly there are ways of experiencing and of thinking about things, which are common to all mankind, yet which mislead us in judging external things. To all men, distant objects such as mountains look closer in a dry clear atmosphere than in a moist one. To all, a straight stick appears bent when half submerged in water. Any man may see a mirage, or find his senses deceiving him in looking at the stage in a theater, or in watching a skilled magician. These errors are well known, and we are familiar with their causes. But how many more subtle deceptions mislead us, or how fundamental these may be—perhaps changing radically the whole world as it appears to us from the real world which we think we are beholding—this we do not know. However, it is a problem which does not lie in the province of the various sciences to investigate for themselves, but is left to that branch of philosophy known as *epistemology*, or the theory of knowledge.

7. Functional Explanation.

One further characteristic of the special sciences which is of especial importance to us is their virtually complete absorption in securing *functional explanations*. In primitive times, men sought explanations in terms of *spirits* which inhabited things and caused them to act as they do. This view was replaced by explanations in terms of *forces*—a mystical kind of entities which moved about the world doing things. Modern sciences do not assume such forces, and for the greater part they do not replace them with any other agency which can account finally for *why* things happen. Instead, they direct their efforts to securing accurate descriptions of how things occur with relation to other things, or how they function together. Thus, in earlier times, if one spoke of one thing as being the cause of another, there was the assumption that something quite definite in the form of a causal force or agency intervened between them. But if the contemporary scientist speaks of cause and

effect, he means to imply little more than that there is a *functional* or working relation between the two, so that the occurrence of one (the *cause*) is followed regularly by the occurrence of the other (the *effect*). For all practical purposes, this is all that need be known—if we want the effect, we may try to produce the cause; there is no practical gain in knowing ultimately *why* one precedes the other. And for scientific purposes, this functional relation is all that *can* be known—for the methods of the sciences are not suited to the discovery of ultimate reasons for things. Whether any other method can deal successfully with this problem, or whether man may ever succeed in discovering an ultimate reason behind things, which would account for their doing what they do, is a disputed point. In any case, the problem is not one attempted by the special sciences. Its solution must be determined, whether positively or negatively, by the branch of philosophy commonly designated *metaphysics*.¹

II. DIFFERENCES BETWEEN PHILOSOPHICAL AND SCIENTIFIC EXPLANATION

We have suggested that if *science* be taken in its broader meaning, as signifying the attainment of knowledge by exact observation and logical systematization, then philosophy may be regarded as one of its branches. On the other hand, Renan was correct in saying that: "Philosophy is not a separate science; it is one side of every science." It is not a separate science in the sense that it adopts a limited field of physical nature or social relations for study, seeking the facts and attempting to systematize them *within* that field,

¹ The French philosopher, Auguste Comte, for example, held that since all human knowledge must be limited to the field of human experience, and hence to the realm of relative things, it is futile for anyone to seek ultimate and final explanations. We should avoid metaphysics and seek only clearer understanding of functional relations. To a considerable extent, modern pragmatism shares this view. Yet, as James recognized, metaphysical problems cannot be merely waved aside. Even the question of whether ultimate explanations are possible is a metaphysical one, and must be dealt with on metaphysical grounds.

"Positive science," writes M. Berthelot, "seeks neither first causes nor the ultimate goal of things."

as do chemistry, astronomy, geology, and the other special sciences.¹ "Philosophy is distinguished from science," says Bertrand Russell, "only by being more critical and more general." The field of philosophical inquiry embraces all of human experience. Its final purpose is to harmonize or rationalize that experience *as a whole*; an objective described by Plato as *the effort to think all things together, or in relation to one another*. "The philosophy which is so important to each of us," says William James, "is not merely a technical matter; it is our more or less dumb sense of what life honestly and deeply means. . . . It is our individual way of just seeing and feeling the total push and pressure of the cosmos."²

i. Philosophical Explanation as More Concrete.

The relationship of the fields of the special sciences and of philosophy has sometimes been suggested by the use of the words *abstract* and *concrete*. Experience comes to us as a highly complicated, but also as a unified, whole. Chemical, physical, biological, historical, political, economic aspects of things are all there, not clearly differentiated, but fused in the total nature of things. Added to physical facts so that they seem indistinguishable aspects of them, are their meanings and values. From this totality of human experience, a particular science *abstracts* or singles out specific aspects for its study. These aspects, whether chemical, biological, or some other, then constitute its field. Within this field, as we have seen, effort is made to find the relevant facts—that is, facts which bear on this chemical or other particular phase of existence, and further, all the facts of this particular kind are systematized. Since it is the task of a particular science to secure an explanation of only its

¹ It must be remembered, however, that increasingly the special sciences are tending to recognize their interrelations and dependence on one another. This is well shown in the rise of such boundary sciences as physical chemistry and biological chemistry. The close relationship between mathematics, physics, and astronomy has long been recognized.

² William James, *Pragmatism*, Lecture I. Published by Longmans, Green and Company, New York, 1907.

EXPLANATION FOR SCIENCE AND PHILOSOPHY 33

special kind of facts, it adopts methods, assumptions, or postulates, which prove suitable and useful *within its field*. It need not so much as ask whether these would be suitable elsewhere or useful to the study of other aspects of experience. This leaves open the question of how far such assumptions are consistent with the *whole* of experience, and also it leaves a larger question: By what kind of system or order may experience *as a whole* be satisfactorily organized and explained? Enormously valuable as such knowledge may be, it is not enough to know how chemical facts, or physical facts, or economic facts fit together with other chemical, physical, or economic facts. We want to know how these various *systems* of explanation fit together into an intelligible view of life as a whole and of the world. As human beings, we cannot live and act altogether in the realm of any one of the special sciences. Nor can we dwell altogether first in the realm of one and then of another, acting at one time purely as chemical compounds, at another as atomic structures, and at a third as members of a political group. We are all of these and more at all times. We are rational beings with interests and purposes which cut across all fields of the special sciences. In terms of these, we may organize facts of one field with those of another, and all to the end of serving some purpose and securing some value which may lie in the province of no particular science. All of this demands organization and a pattern in terms of life as a united whole. And the intelligent organization and pattern of this whole life demands an idea of the environment in which it is to be lived. This environment, we have said, is not exclusively the abstract realm of particular science, it is *the world* as a whole. Now it is the business of philosophy to secure such a systematic pattern. As the special sciences seek to organize the facts of their abstract fields in a systematic way, so philosophy must seek the unifying order in which all of these particular systems fit together. It must seek to find some system by which experience as a *concrete* whole may be put together in an harmonious manner.

2. The Explanation of Primary Assumptions.

A *second* point of difference between philosophical explanation and that of the special sciences arises from this first. If experience is to be viewed in its concrete wholeness, it will not do to allow contradictory assumptions employed in the explanations of different special fields to stand as ultimate facts about the real world. They may be justifiable to some extent as aids to special types of inquiry, where the actual facts are obscure, but at most, they may be retained only until better assumptions become evident. We have seen that within any scientific system, contradictions must be overcome as soon as possible. If philosophy is to formulate a genuinely scientific account, it must abide by this principle. Since its field of investigation is experience as a unified whole, the assumptions and postulates of the various special sciences which study certain of its aspects must be related to one another. That they may be related harmoniously, they must be critically examined. Contradictions which may appear between the assumptions of different sciences, as well as contradictions between scientific assumptions and other phases of experience not dealt with by any special science, must be discovered and cleared away. In clarifying contradictions of the first type, the philosopher may aid, but the work of actually altering the assumptions must be left to the scientist. But the second task, that, namely, of reconciling the assumptions of the sciences with experience as a whole, or with the intelligible world and life as wholes, is the distinct interest of philosophy.

3. Critical Examination of Knowledge.

A *third* difference between the explanations of philosophy and of the sciences also is closely related to the first. If the philosopher is to seek to explain the concrete whole of experience, his systematic treatment cannot leave out of account so important a fact as that this experience belongs to human beings, with definite human ways of perceiving and thinking. Their manner of experiencing, we may expect,

can be shown to play an important part in determining how the external world will appear to them. The sciences seek to discover and correct errors of observation and calculation which may appear in the work of any individual scientist by repeating the work and by comparing the findings of numerous investigators. This may effectually remove individual errors, but since all scientists are human beings, it is clear that no amount of comparison or checking of results in itself could detect wherein those results had been affected by characteristics *common to all human minds*. If all men were color-blind, none might need be conscious of the limitation. We have certain general ways of relating the items of our experience to one another. For example, we think of things as causes and effects of one another, or as before or after, or nearer or farther from each other, but are these relations of cause, of time, and of space actually parts of the external world, or are they forms in which our minds organize our experience of that world in order to make it intelligible? The question cannot be answered merely by noting that all minds agree in relating things in these ways. The special scientist cannot turn from his particular objective to investigate the nature and ultimate validity of human ways of perceiving and thinking. For him, the world of nature, we have noted, is that which he and other people like him perceive through their senses. The philosopher, however, may pursue the further inquiry of how this world of the human senses and of human interpretation is related to the real world itself. The question, of course, may be asked of how the *philosopher* is to know the nature of the real world, since *his* perception and reason, also, are altogether human. To which it is replied that he claims no superior or secret avenue to truth and reality. He must pursue the arduous road of all human thought, observing and systematizing as best he can the evidence available. But the philosopher differs in that he applies this general scientific method to the problem of knowledge itself. Instead of asking what are the facts about rocks, chemical reactions, or

organisms, and what systematic arrangement will reveal the harmony between these facts, the philosopher turns to ask—what are the facts about human knowledge itself, and how are these facts to be put together consistently? The problem is a difficult one, for there is no means by which to compare our ideas of objects with those objects as they actually exist in the external world. For there is no way of discovering what any external object itself is—to know it at all is to know it by means of our minds' activities. Since the philosopher may not make such an appeal to direct knowledge and comparison, he must rely chiefly upon reason. That is, he must depend upon a coherent interpretation of the available evidence. This available evidence is chiefly, if not entirely, presented by experience. Thus, in a sense, it is evidence from only one side of the case. But by applying the most searching methods of investigation to experience itself, the philosopher may hope to discover its inconsistencies, and to be able to infer how far it is a reliable presentation of the real nature of things, and how far it is a construction created or altered by the experiencer.

4. The Search for Final Explanations.

A *fourth* point of difference between philosophical explanation and that of the special sciences is usually said to be found in the interest of the former in *final* accounts of things, and of the latter in *functional* accounts. It must be recognized at once that philosophers are by no means agreed, however, on the possibility of securing such final explanations. Positivism since the time of August Comte, and pragmatism since William James, have maintained that philosophy may not legitimately project its inquiries beyond the limits of human experience; it may not hope to secure ultimate or final accounts of anything. But a large number of philosophers have believed and continue to believe, on the contrary, that since this human experience arises as one product or phase of the world's activities, it may be supposed that a sufficiently exhaustive study of its nature will reveal

the nature of the world which produced it. Cannot one tell a good deal about the interests, intelligence, and skill of an artist by viewing his pictures, or of a craftsman by examining his work, or of a student by reading his examination papers? And if we are reminded that we have said that experience is partly shaped by the human mind, and not alone by external nature, it may be replied that since this mind, too, is a part of the world, its activities likewise should reveal something of the nature of that world. But whether we can ascertain enough knowledge from the investigation of experience to be safe in forming conclusions about the real nature of the world or of ourselves, is a question which we must consider later in more detail. Even though our conclusion should be negative with regard to any knowledge of the ultimate nature of physical things, it may not be so with respect to the ultimacy of values. Thus in pragmatic thought, reality is not something which exists in some kind of world outside of all human experience and unaffected by it. Yet there is something more *real* and final than any particular fact or activity—that more real and final thing is their *value*, or their good.

5. The Investigation of Meanings and Values.

Finally, a *fifth* point of difference between the explanations of philosophy and of the special sciences is found in the attention given by the former to the *qualitative* aspects of things, that is, especially, to their *meanings* and *values*. We have seen that measurement and exact comparison in terms of mathematical calculation play an exceedingly important part in the work of the sciences. It is by this means that exactness is secured, and even in the less exact work of certain of the sciences, precise measurement and calculation in some form is the ideal. If, in the natural or the social sciences, to explain means to find and describe interconnections, then to describe these accurately involves some kind of comparative measurement. Now we know how to measure quantities with a high degree of exactness, but we cannot measure

qualities in this way. We may say that one picture is exactly three times as large as another, or twice its weight, but we cannot determine that one is 86.007 or any other per cent as beautiful as the other. We may determine that one man is three and a half inches taller or that he weighs twelve pounds more than another, but we cannot determine precisely how much he is morally better than the other. The values and meanings of things are not susceptible to *exact* measurement or to *precise* comparison. When a science attempts to deal with them, as psychology legitimately may, it must confine itself to measurable aspects, such as attendant movements of the bodily organism when they are experienced. Or if it attempts to treat these meanings and values, not in terms of such aspects, but of their significance or validity, it must remain purely descriptive or become philosophical.

Here, then, in the meanings and values of things, we find a further field of philosophical inquiry which by nature lies outside the realm of the sciences, though they themselves owe their existence to it. But so does every purposeful thought and action. "In reality," says Professor Schiller, "our knowing is driven and guided at every step by our subjective interests and preferences, our desires, our needs and our ends. These form the motive powers also of our intellectual life. . . . For our interests impose the conditions under which alone Reality can be revealed. Only such aspects of Reality can be revealed as are not merely knowable but as are objects of an actual desire, and consequent attempt, to know. All other realities or aspects of Reality, which there is no attempt to know, necessarily remain unknown, and for us unreal, because there is no one to look for them. . . . Our valuations (or interests) thus pervade our whole experience, and affect whatever 'fact,' whatever 'knowledge' we consent to recognize."¹ In order to free their investigations from prejudice and to secure factual

¹ F. C. S. Schiller, *Humanism*, p. 10. Published by Macmillan and Company, London, 1903.

descriptions uncolored by human emotions and attitudes, the pure sciences seek to deal with their material without respect to its meaning and value for human life. As a method, of course this procedure is entirely justifiable, but it should not be forgotten that it is a method employed by human investigators *for the purpose of better serving a human value—namely, truth.* We desire the value to be derived from knowing the truth, and to attain this value we abstract certain aspects of the world from the meanings and values which they possess for us, and study them in this artificial detachment. But it would be unjustifiable should we argue that, having done so, we do not find in the detached aspects what was left out of consideration at the beginning. That is, it is an error to suppose that because the sciences picture a world of physical objects and events, and do not find equally present meanings and values, that therefore these latter are in some way fictitious. The sciences abstract their facts from the whole of experience at the beginning of their investigations, and clearly they cannot find or put into their conclusions what was purposely omitted from the material selected at the beginning for their investigation.¹

But meanings and values are not only part and a real part of human experience—they may be said in a sense to be the basis of that experience. A world which had no meaning or value in it would be nothing for us or to us. We could not so much as think about it, for to think or to seek to understand is to seek *truth* which for us is a primary value. This does not answer the question, however, of what meanings and values really *are*. Since all thought and all purposeful action is determined by them, and life depends entirely

¹ "Positivism with its apotheosis of the scientific method, with its claim to give a comprehensive explanation not merely of natural reality, but also of ethics and aesthetics, by constructing the whole sphere of philosophy on scientific principles, carried this prejudice to its extreme consequences, declaring those problems for which, from its one-sided, restricted point of view, it could find no adequate solution, to be insoluble, and was thus led by faulty perspective to attribute to the nature of human knowledge that inadequacy which was due rather to its own method and system."—Aliotta, *The Idealistic Reaction against Science*, p. 4. Translated by A. McCaskill. Published by Macmillan and Company, London, 1914.

PHILOSOPHY

40

upon them for significance, the question of their nature is the most important one which we may ask. Just as the sciences abstract the physical aspects of things for investigation, so philosophy may abstract their meanings and values. So fundamental and all-embracing is this investigation that the whole task of philosophy has sometimes been defined as the discovery of the meaning of things.¹

¹ For references to literature having to do with the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER III

SUBSTANCE AND PROPERTIES

I. THE NEED OF SUBSTANCE

Commonly, we regard the world as containing a large number of well-defined objects, each possessing quite definite characteristics of its own. Although related to one another in various ways and hence capable of affecting one another, these objects seem to have self-identity and a considerable degree of independence. A book, for example, is related as an effect to certain causes. As a body occupying space, it is related to other bodies as larger or smaller than they, and in a particular position with reference to them. Furthermore, the book is closely related to other objects through sharing with them such properties as color, weight, and hardness. It, like all other objects of every-day experience, is composed of parts—pages, words, letters of the alphabet—any one of which also may be regarded independently as a something-in-itself. On the other hand, the book, again like other objects, may be considered as a part within some larger unity—one volume in a library, or one of numerous treatises on a particular subject, or one of various works by its author. Nevertheless, the book seems to us to be a distinct object, which lasts through a considerable length of time, and *possesses* certain properties or qualities which clearly differentiate it from other objects.

It was the influence of Aristotle, more than that of any other man, which established the problem of substance as a primary if not, indeed, the preëminent one of all earlier philosophical inquiry. As there are special sciences to study various phases of the world's nature, he said, so should there be one science, that is *philosophy*, to investigate its ultimate nature, or *being*. This question of the fundamental

nature or *being* of things, he regarded as essentially the same question as that of their basic substance. "There are many senses in which a thing may be said to 'be,'" he wrote, "but they are related to one central point, one definite kind of thing, and have not merely the *epithet* 'being' in common. . . . If this (*being*) is substance, it is of substances that the philosopher must grasp the principles and causes."¹ Some things, he pointed out, are themselves thought of as substances; others are commonly regarded as qualities or properties of a substance; others are related in some other way to substance. In all of these cases, there is need for a systematic study of substance, as the *being* on which all qualities and relations and therefore all human experiences depend.

Despite Aristotle's emphasis, however, it must be remembered that although a substance *may be* behind and producing all qualities, nevertheless we never perceive such a substance directly. For us, objects are organizations or *bundles* of sensations. Through the sense of sight, we perceive blocks or patches of color; through touch, feelings of hardness and softness, of coldness and warmth; through taste, sweetness and bitterness; through hearing and smell, tones and odors of diverse kinds. The first and most essential work of the *knower* is that of bringing together the specific perceptions of his various senses at any one moment, and of organizing them into collections which he then regards as single objects. That which is a kind of feeling or feelings, as Lotze says, he transforms into the idea of *a thing*. Any *thing*, however, has importance and value for us, not in itself, but because we assume that its properties will affect us in definite particular ways whenever we encounter it. If we order a crate of oranges, it is because we wish to enjoy *sensations* which are to be derived from them. Whatever an *orange-itself* may be, its significance for us arises from a belief that it possesses properties of color and flavor which

¹ Aristotle, *Metaphysics*, 1003^a 21-219. Translated by W. D. Ross. Published by the Oxford Press, and to be found in part in convenient form in Scribner's *Modern Student's Library*.

will provide particular sensations whenever we or other human beings experience it. If I tell someone that he will find an orange or a sheet of paper on a table, I mean that on that table is a *something* which constantly possesses qualities having the capacity of producing the sensations which we associate as those of an orange or sheet of paper. Thus objects or bodies have been described by John Stuart Mill as simply "permanent possibilities of sensation."

If we can only think of or define a thing by its properties, why should we believe that anything more than these actually exists in the physical world? Why should we suppose that a thing is some kind of entity that *has* color, taste, or odor, rather than that it is simply what we experience it as being—a collection of properties? Why should we assume that the world contains anything more than objects which are simply *organizations of qualities*, interrelated thus in various group-combinations? Yet common sense rebels at this supposition and insists upon having a substance in things. In language, we cannot have adjectives without substantives to which they may be attached as dependents and modifiers. Qualities and relations are looked upon as having a kind of adjectival nature. By this nature, they are dependent; they must be qualities and relations of *something*. That something must be of the character of a substantive, capable of supporting both itself and its dependents. The activities and characteristics of mental life, no less than the qualities of physical objects, have been widely supposed to require such a *substratum*. If there is thought, must there not be a *substantial mind* to do the thinking? Generically, our word *substance* is from two Latin words, *sub* and *stare*, meaning to *stand under*. The substance of anything is that which underlies its properties. It is that which *has* or *produces* them.

No argument is needed to convince most men that, in fact, such a basic substance does exist at the heart of things. When they observe a color, or feel hardness, or hear a sound, or perceive a movement, it seems evident to them that some

substantial *thing* is present which *has* this color, or hardness, or causes this sound, or moves. So the philosopher Thomas Hobbes wrote: "We can conceive no activity whatsoever apart from its subject, e.g., we cannot think of leaping apart from that which leaps, of knowing apart from a knower, or of thinking without a thinker." Though this conclusion may appear obvious, nevertheless it must be admitted that it is not based on any direct perception of such a thing-itself, for our senses show us only the color, hardness, or other properties which things *have*—they never reveal directly an object-itself causing or lying behind them. If any physical object could not be touched, tasted, seen, heard, or smelled, we could know nothing of it; for us, it simply would not exist. It follows that our belief in the reality of substantial objects supposed to have the properties we perceive must be based on inference. This in itself does not discredit it, for many inferences are well justified. But is this inference of substance a necessary and useful one? Is the necessity which we feel for believing that the physical world is made up of substantial objects (1) a logical, or (2) only a psychological necessity?

A *logical necessity* is one which arises from the very nature of the situation which is being considered. It is genuinely binding because the situation itself requires it. Thus, it is a logical necessity that a part shall be less than a whole, and that no angle of a triangle shall be as great as 360° . To suppose otherwise would be to suppose something which was in contradiction to the nature and meaning of *whole*, *part*, and *triangle*. A *psychological necessity*, on the other hand, arises, not out of the situation itself, but out of our ways of thinking. It is based on experience and habits of thought, and hence it may not be a necessity for the situation about which we are thinking. Thus, in the days of Columbus, it was widely held that the earth *could not* be round. The necessity that the earth be flat was not in the nature of the earth, however, but in the geographers' ways of thinking about it. Paulsen recalls the incident of a Dutch ambassador telling a former king of Siam that in Holland water some-

times becomes so hard and firm that one can walk upon it. The king regarded this as inconceivable and impossible because it is the very nature of water to be liquid, not firm. The necessity, however, was not in the nature of water, but arose in the king's mind, as a consequence of his limited experience and ways of thinking. Likewise, when common sense argues that, though it may never be perceived, we *must* assume that things are substantial entities which merely *have* the qualities that we observe, the critical student will inquire whether the *necessity* of such a belief is a logical or a psychological one. Must substance actually exist in things, or may it be only a *category*, or basic form, which we use in thinking about and explaining them?¹

Common sense has three reasons for insisting upon the reality of substance, even though sense-perception can tell us nothing of it. It is held: (1) that substance is required to account for the permanence which we find in objects, as we experience them; (2) that substance is required to account for the universe as an independent and self-existent order; (3) that substance is required as a cause to account for human sense-perceptions. Let us briefly consider the merit of these arguments.

I. Substance as the Basis of Permanence in Objects.

Since we can think of a thing only in terms of its properties, it might be supposed that we could think of it as the *same* thing at two different times only if its properties remained unchanged. In fact, of course, this is not true. We regard the giant sequoia as being the same tree which, centuries ago, was a delicate sapling. The waters of a river are constantly changing and it may even cut a new course, but we continue to call it by the same name and to look upon it as the same river.² Though the material comprising our

¹ The more advanced reader should refer to J. Loewenberg's "Subject and Substance," in *University of California Publications in Philosophy*, Vol. IX.

² Heraclitus (about 505 B.C.) taught that "All things flow; nothing abides. One cannot step twice into the same river. Into the same rivers we step and we do not step; we are and we are not."

physical bodies may have changed quite completely, yet we would not readily admit that we do not have the same bodies now as when we were children. It is not its territory which makes a political state, for various states may exist on the same land at different periods. But within the life of a single state, if it endures for several centuries, there may be a complete change of individuals who compose its citizenship, change of public buildings, of laws, and even of constitutions. Nevertheless, we feel that in some way it remains the same state.¹ Every moment, the material objects of our world are growing older and their properties are changing in a great variety of more or less perceptible ways. Our own bodies, our interests, attitudes, and thoughts, too, are changing. If, to remain the same thing, it were necessary that an object retain the same properties, then at no time would the objects or people of our world be the same that they were an hour before. Common sense is ready to recognize very important and extensive changes, but it insists upon treating things and people as fundamentally the same entities after as before the changes occurred.

Indeed, *change* itself is paradoxical, in that it requires permanence no less than alteration in that which it affects. To say that something has changed is to assert that it is not now altogether the same as at some former time. But it is also to imply that in some fundamental way it *is* the same object now as before it changed. The barometer is a useful instrument because it varies in certain regular ways with alterations of atmospheric conditions—but if it is to change, it must also remain the same barometer. The *alumnus*, re-

¹ The problem of how far a thing may *change*, yet remain the *same* thing, has been raised repeatedly. Windelband suggests an ancient illustration in the "vessel of Theseus," which, for centuries, the Athenians sent annually to the festival of Delos. "Although its masts, decks, oars, etc., had been successively replaced, it was still the same ancient and sacred ship." An equally pertinent illustration might be found in the frigate *Constitution*, usually kept in Charlestown harbor near Boston.

Similarly, Bradley reminds us of Sir John Suckling's stockings, which had been darned with black thread until nothing of their original green silk was left. Were they still the same stockings?

turning to his alma mater on the twentieth anniversary of his graduation, looks with pride at an ivy-covered wall and recalls the tiny shrub which he had helped to plant there on his class-day. There has been change, yet it is still the *same* ivy, and it is in the fact of that identity that he finds the basis for his pride. When anything changes, it may acquire new properties or lose older ones. It may come to look differently, taste differently, feel differently. But beneath these alterations, in some fundamental way it must continue to be itself. Otherwise, we should be obliged to say—not that a thing had changed, but—that first one thing, and later, another, had existed.¹

Experience tells us that we live, not in a static world, but in one where changes are continuously going on. But experience also shows a certain familiar likeness in objects which surround us from day to day. Memory assures us that despite diversity and development in our own mental life, yet we are the same people from birth to death. Moreover, if we are to plan our actions or live intelligently, there is the practical necessity of relying upon a certain degree of stability. From all of this, what is common sense to conclude but that there is a permanent substance in things, that in some way it *has* the properties which we perceive, and that change in these properties does not alter fundamentally the underlying *thing-itself*?

2. Substance as the Basis of the Independence and Self-Existence of the Universe.

The universe has been thought of in two ways: (a) as an organization which is dependent for its existence and activities upon a superior Power, or God, who created and now continually operates it. Like some vast mechanical device, it could not have come into being without a Designer, and having once been created, it would remain a dead and idle thing without the constant supply of power from a source

¹ The general problem of change will be discussed further in relation to space and time, and to causality. Cf. Chapters X-XIII.

beyond itself.¹ (b) The universe has been regarded, also, as an independent organization, a "going concern," which possesses within itself the stability and power necessary for its own perpetuation and activities. Its substance may have been created, or it may always have been—on this question there has been argument. In either case, an explanation of the world as we find it and of its multitudinous activities is to be sought within the order and nature of the world itself, rather than in some power or Being, existing outside and above it. The view does not assume that there is no God, nor does it preclude the possibility that He may be responsible for the world's creation. But it does hold that while there may be good basis for religious faith, there is need too for a thoroughly scientific account of things, which shall regard them in terms of their relationships to one another, apart from any religious assumptions. Furthermore, to suppose that the universe has no power or stability of its own and would collapse but for the constant intervention of a deity, merely is to throw the problem back a step farther from our experience. If it frees us from the problem of accounting for the stability and power *in the world* which gives it permanence and causes its activities, by answering that God does these things, it simultaneously raises the further question of what may be the nature of *God's* eternal permanence and power. What kind of being is He, that He should be eternal and should provide the permanent basis of all that exists? Thus occasionalism fails to get beneath the surface or to meet the real difficulties of the problem.

¹ This general doctrine is known as *occasionalism*. The strongest supporters of this view lived in the seventeenth century, and were among the followers of Descartes. These men emphasized especially its application to human thought and action. Thus Sylvain Régis wrote: "In order, properly speaking, to be able to produce actions, a man must act outside himself and through himself, i.e., by his own power; and it is certain that God alone can act in this manner. From this it follows that God is the only truly efficient cause." Similarly, Geulinckx argued that if one can secure food and clothing in return for money, this is not because of any natural power possessed by the metal itself, but because of a worth assigned to money by a human institution. Likewise, it is not material motions *themselves* which produce sensations and ideas in human beings, but the power of motions to produce these sensations is by divine institution.

One of the most frequent answers proposed, and one which has appealed to common sense, is that the permanent core of things, the basis of their relatively independent self-existence, is to be found in their *substance*. Is it not difficult, we are asked, to understand how a world composed entirely of qualities and relations could avoid immediate and total collapse—if, indeed, it could have been constructed? A world in which everything is dependent for its existence upon something else, would seem to resemble a chain, each link of which is held by the link above it. But if there is nothing fixed to uphold the top link, must not the whole chain fall? If everything is dependent for its existence upon something else, then nothing is able, on its own account, to support the series. The situation would seem to be analogous to the well-known view of certain eastern philosophers with respect to what holds the earth up in physical space. It is held by an elephant, they argued, and the elephant stands on a huge tortoise. Something else was provided for the tortoise to stand on, and so on back the description was carried until the philosopher wearied of his task of explanation. But unless something fixed and able to maintain its position with *nothing* to stand upon were found beneath this whole series of dependent supporters, then the world, elephant, tortoise, and all the rest, certainly must fall. Similarly, if properties require a substantial something to which they may belong, and if relations require substantial entities to relate, then obviously, if there are no such substantial entities, properties and relations cannot exist by themselves or make a world. Therefore, argues common sense, a substance or substances must really exist, and it is this substance, or these substances, which must give to the world its stability and endurance.

3. Substance as the Cause of Human Sense-Perceptions.

Another, and perhaps the most common reason for belief in the reality of substance, is that it seems to be required as a *cause* for our sensations. It may be admitted that through

sight, touch, taste, hearing, or smell, we do not experience things-themselves directly, but their properties. It may be held, indeed, that these properties are simply the ways in which things *affect us*—the ways in which they *appear* to beings equipped with the particular mechanisms of nerve structure, eyes, ears, etc., which we possess. Nevertheless, must there not be *things-themselves*, to affect us in these particular ways? And if we *think* in certain ways, must there not be some kind of *thing*, other than the thinking activities themselves, which *has* these thoughts? Thus, both substantial *things* in the external world to cause our sensations, and a substantial mind to cause the activities of mental life, have seemed indispensable to many philosophers, as they have to common sense.

It should be noted, however, that this argument assumes two beliefs which well may be questioned further. (1) It assumes that everything, or at least our sensations and thoughts, require a *cause*. As a matter of actual fact, are we certain that this is true? Frequently enough, we experience particular things following one another time after time in a regular way, and assume that they are causes and effects of one-another. But do we ever actually perceive this thing which we call “causing”? Must it not be admitted that the idea of causal relationship between things is one which *we* employ to explain why some things so regularly follow certain other things? Is it not possible that we are mistaken in inferring that this concept is applicable to the real external world, or that *its* events actually are related in the way we have devised to account for their regularities?¹ (2) The argument assumes that *substantial* entities are necessary to cause sensations and ideas. Even if it be granted that all things must have causes, still, why would it be necessary to suppose that a sensation of color, or hardness, or taste, must be caused by anything *external*? Why might it not be produced within the mind itself? No one doubts that this happens in the case of dreams. If it be said that

¹ For discussion of the causal relationship, cf. Chapter XII.

such an account is fantastic, and that undoubtedly there is a real world outside of us which we perceive, it may be asked why this real world must be a substantial one in order to cause sensations. How do we know that only substances can produce such effects? Indeed, does it not seem a little strange if sensations, which can be only of *properties*, must be caused by *substance*, which is not a property at all, but different in its fundamental nature?

II. DIFFICULTIES WITH SUBSTANCE

We have seen that common sense seems to require a belief in some kind of substance: (1) as a basis for the permanence which we find in objects; (2) as a basis for the independent self-existent order of the universe; (3) as a causal basis to account for our sense-perceptions. Not a few of the classical philosophers have agreed with this common-sense view. However, there are difficulties presented by the position which must not be overlooked. In particular, the following should be considered.

i. The Unity of an Object.

Water appears to be a well-defined and unified object. We may assume that a substance underlies its properties. But let a chemist break it up into constituent gases, hydrogen and oxygen, and the question arises as to wherein its substantial identity *as water*, consisted. Shall we say that, after all, water is not one substance, but two: hydrogen and oxygen? But hydrogen and oxygen, too, may be broken up into atoms, and these atoms again into electrons and their positive nuclei. Shall we say that hydrogen and oxygen are substantial entities, then, or that their atoms are, or shall we reserve this term substance for only the simplest units, the electrons and positive nuclei? It may be remembered that physics cannot tell us what electrons and protons really are—for they are known, not in terms of their inner nature, but in terms of their *effects*. So far as these effects are known, they do not display the inner nature of the elec-

tron, but its position and motion—what it *does*, not what it *is*. Our ignorance here may mean no more than that substance itself is unknowable. However, since all electrons are identical in kind, the assumption that they are embodiments of some elemental stuff or substance would not assist us in explaining the variety of appearances and properties which objects present. If all electrons are substantially alike, the variety must come, not from what they are, but from the diverse ways in which they are combined. Identical groups of electrons might be so organized that we would call one organization a stone and the other Julius Cæsar. The difference between the stone and Julius Cæsar would consist, then, not in any diversity of the ultimate substance from which their two bodies were composed, but in a difference in the ways in which that substance was organized. And so all objects would be what they are, not because of their substance, but because of their organization, *form*, or *structure*.

Shall we apply our term *substance*, then not to an unknowable stuff, but to the organization or *form*, which makes each object specifically what it is and different from other objects? There is much to be said for this. Plato adopted such a general position and regarded *forms* (or as he designated them, *ideas*) as the real substance of things. Matter which in itself possesses no organization or form he regarded as nothing in particular, and called it mere *non-being*. The *forms* are not subject to the conditions and changes which affect their material embodiments, but are permanent. A man may be born, mature, grow old, and die—but the entire life cycle of any particular man is but an embodiment of a more general form or pattern, namely, that of human beings. Men pass over their course of days on the earth and are succeeded by others, but the form of human life continues unaltered. This form is the true substance; the individuals are its transient expressions in the world. That any particular being is *a man* is due to the fact that in him is expressed this universal pattern. So with all particular things and with the world itself, their real substance is to

be located in their forms. For Plato, these forms are related within an order, and rest upon a Supreme Form, which they all more or less adequately express. In this way he provides a basis for interrelations and unity in the world.

This position with regard to the nature of substance has many merits, yet in it there lurks a difficulty which became clear in the work of Plato's most illustrious pupil, Aristotle.¹ Curiously, it became clear, however, not because Aristotle saw it clearly or pointed it out, but because he became involved in serious trouble and confusion because of it. On the one hand, he objected to Plato's view because it seemed to place the form and so the substance and reality of things outside the things themselves. If the form of a man, or an oak tree, or an orange, or anything else, is simply the form of men, of oaks, and of oranges in general, it is over and apart from the particular objects which express it. Now it is true that particular men, oak trees, and oranges are nearly enough alike to permit our classifying them as groups as of the same kind of beings. But it is true, too, that no two objects, even of the same class, are identical. Each man, each oak tree, each orange, must have a form of its own, as well as a general form, common to all the members of its class. In his arguments against Plato's account, Aristotle urged that each particular object must have its own pattern *within itself*, and that it is useless to suppose an order of general forms outside and above these particulars. On the other hand, Aristotle was a scientist, and one of the most advanced in the ancient world. He realized the importance of classification, seeing clearly enough that things may be grouped together on the grounds of common characteristics. Furthermore, various classes are related to other classes; the more inclusive class, or genus, may have numerous divisions into smaller and more highly differentiated groups, or species. To group things together and to regard groups as related to one another in various ways is to deal with them in terms of their common characteristics. We may speak

¹ Cf. Aristotle's *Metaphysics*, 1028^a 10 ff.; 1037^b 8 ff.

of oranges, apples, and bananas, only if we disregard their individual characteristics and think of them in terms of the common form of all oranges, or of all apples or bananas. If we group them together as species under the larger genus, *fruit*, it is to consider still more general properties.

The problem is this: If one is to regard the form or organization of things as their basic substance, is the particular form of *each object* to be thought of as its substance, or is the more general form of its *class*? If we choose the former alternative, it is to discover on examining any object that its particular organization is made up of such characteristics as color, hardness, and sweetness—all of which are not just its own, but are shared, too, by many other objects. Indeed, Aristotle pointed out that if an object contained anything so completely its own that it could not be generalized and thought of apart from the object, that *something* could never be known at all. For to know that an object is red requires that we know what redness is; to know that it is hard or sweet requires that we know hardness and sweetness as general characteristics, or *universals*.¹ Hence the particular organization turns out to be but an organization of what is not at all the unique possession of that object. But if one choose the other alternative, and say that the substance of things lies in the form of their *class*, rather than their individual selves, another difficulty is presented. For then we must ask, *what class?* Classes of things contain smaller classes within them, and belong to larger classes which include more than themselves. Shall we conclude that the substantial form of an apple is that, say, of wine-sap apples, or of apples in general, or of *Malus*, the genus of apple trees, or of fruit? The particular apple expresses the structure or form of all of these, but to regard a particular apple in these broad terms certainly is to lose all the definiteness and solidarity which we sought in assuming that it had any substance at all.

¹ Cf. Chapters IX, XIV, and XV.

Our conclusion is likely to be that while it may be practical and convenient to regard various objects of our world as independent entities, their independence and separateness is, in fact, a very limited one. Whether we look upon them as embodiments of some stuff or material-like substance, or whether we regard them as forms, they belong to a world; they are organizations of smaller parts; they are parts within larger organizations. To suppose that each possesses a substantial base which is independent, supporting itself and its properties, is to accept an assumption which leads to an endless tangle of contradictions and difficulties.

2. The Relation of a Substance to Its Properties.

A further difficulty in the way of believing that the world is composed of substantial entities or even of a single substance, possessing many and varied properties, is discovered when one considers the relation of these properties to their substance. If we hold that the properties are the same as their substance, there is no reason to make the differentiation, or to claim that more than properties exist. If we hold, on the other hand, that properties are different from their substance, there arises the question of how any property or quality could be said to be a property or quality of something which was completely unlike it. How could a thing *have* characteristics which were unlike itself? Further, we have seen that our knowledge of things is always a knowledge of their properties. If things-themselves are unlike these properties, we can have no knowledge of them. But if our world of feelings, sights, and sounds is not the *real* world of things-themselves, how are the two related? Here we seem to be faced with a dilemma. If things-themselves, or substances, are *like* their properties, the two are not merely *related*, but they are identical. If they are fundamentally different, they are not related except as opposites—the property is that which is *not* the substance. Must we choose, then, between saying that substances and their properties are the same, or that substances are not related to their

properties in any other way than as being what their properties are *not*? If we accept the first position, we destroy substance by identifying it with its properties. But if we accept the second, we cut it asunder from its properties and destroy all reason for supposing or desiring that it exist. But is the dilemma a valid one?¹

III. SUBSTANTIAL MONISM AND PLURALISM

The terms *monism* and *pluralism* may be employed either with reference to the number of *substances* or of *systems* (or *structures*) which constitute the ultimate nature of the world. We are concerned here with the former type. If it be concluded that there is some real underlying substance in things, what is its nature? Is it actually unknowable, or is it of a general nature which we may call *material*? Or is it of the nature of *mind*? Or is there not merely one, but are there two or even many different substances? Without some unity our world would not be *a world*, but chaos. But what is the nature of its unity? Is it that of one substance, having many forms of expression, or is it that of an organization which brings together different substances in an interrelated group? Our word *uni-verse* suggests and straddles the question. Literally, it means a *one in many* or *many in one*, but where is the primary emphasis to be placed—on the unity or the diversity? Shall we regard ourselves, for example, as particular forms which the world substance has temporarily taken—as waves on a lake, to use Spinoza's illustration, which are of the same substance as the body of the lake, but which, for a time, assume an independent form of expression? Or shall we consider ourselves as being genuinely unique and independent beings, which merely participate in activities and interests within the general order of the world?

¹ For discussion of difficulties involved in belief in *real* things-themselves behind and related to their properties, cf. F. H. Bradley, *Appearance and Reality*, Chapter II; A. E. Taylor, *Elements of Metaphysics*, Book II, Chapter IV; F. C. S. Schiller, *Humanism*, Chapter I. Especially cf. William James, "The Thing and Its Relations," in *Essays in Radical Empiricism*, Lecture III.

In ordinary thought, we may be inclined to emphasize the diversity of things. Rocks, trees, horses, men, and the distant star, Arcturus—what possible sense can there be to saying that, basically, these are one and the same? Surely, as William James suggests, it will seem that: “My pocket is disconnected with Mr. Morgan’s bank-account, and King Edward VII’s mind is disconnected with this book.”¹ Yet, undoubtedly, things are connected in a great variety of ways and share many characteristics—their size, color, common uses, and meanings are closely related. They exist, too, within the same order of space relationships, and in time they are related as before, contemporary with, or after one another. By chemical analysis, material things, at least, including our own bodies, may be reduced to a relatively small and definite number of elements. The physicist can carry the analysis still farther and reach like units of energy as the base of all material existents. Indeed, two things can be related only if we can find something which they have in common; utterly unlike entities could not be related in any way whatsoever. Does this mean that the diverse objects of the world must have a single common cause?

Monism is a name for the position which maintains that, in the world, unity is basic, while diversity is secondary and has to do only with the accidents, not with the basic reality of things. *Pluralism*, on the other hand, holds that while things may have sufficient similarity to make possible their interrelation in an orderly universe, yet fundamentally they are not the same, but of many kinds. To many, the difficulty has appeared to reach its crucial expression in the relations of *mind* and *matter*. Can these be regarded as basically the same? Because of this difficulty, *Dualism* has arisen. While a form of pluralism, it is yet a compromise with monism. All *material* things, it holds, may be considered

¹ For William James’ interesting account of “The One and the Many,” cf. his volume, *Some Problems of Philosophy*, Chapter VII. He describes this problem as “the most pregnant of all the dilemmas of philosophy.”

properties in any other way than as being what their properties are *not*? If we accept the first position, we destroy substance by identifying it with its properties. But if we accept the second, we cut it asunder from its properties and destroy all reason for supposing or desiring that it exist. But is the dilemma a valid one?¹

III. SUBSTANTIAL MONISM AND PLURALISM

The terms *monism* and *pluralism* may be employed either with reference to the number of *substances* or of *systems* (or *structures*) which constitute the ultimate nature of the world. We are concerned here with the former type. If it be concluded that there is some real underlying substance in things, what is its nature? Is it actually unknowable, or is it of a general nature which we may call *material*? Or is it of the nature of *mind*? Or is there not merely one, but are there two or even many different substances? Without some unity our world would not be *a world*, but chaos. But what is the nature of its unity? Is it that of one substance, having many forms of expression, or is it that of an organization which brings together different substances in an interrelated group? Our word *uni-verse* suggests and straddles the question. Literally, it means a *one in many* or *many in one*, but where is the primary emphasis to be placed—on the unity or the diversity? Shall we regard ourselves, for example, as particular forms which the world substance has temporarily taken—as waves on a lake, to use Spinoza's illustration, which are of the same substance as the body of the lake, but which, for a time, assume an independent form of expression? Or shall we consider ourselves as being genuinely unique and independent beings, which merely participate in activities and interests within the general order of the world?

¹ For discussion of difficulties involved in belief in *real* things-themselves behind and related to their properties, cf. F. H. Bradley, *Appearance and Reality*, Chapter II; A. E. Taylor, *Elements of Metaphysics*, Book II, Chapter IV; F. C. S. Schiller, *Humanism*, Chapter I. Especially cf. William James, "The Thing and Its Relations," in *Essays in Radical Empiricism*, Lecture III.

In ordinary thought, we may be inclined to emphasize the diversity of things. Rocks, trees, horses, men, and the distant star, Arcturus—what possible sense can there be to saying that, basically, these are one and the same? Surely, as William James suggests, it will seem that: "My pocket is disconnected with Mr. Morgan's bank-account, and King Edward VII's mind is disconnected with this book."¹ Yet, undoubtedly, things are connected in a great variety of ways and share many characteristics—their size, color, common uses, and meanings are closely related. They exist, too, within the same order of space relationships, and in time they are related as before, contemporary with, or after one another. By chemical analysis, material things, at least, including our own bodies, may be reduced to a relatively small and definite number of elements. The physicist can carry the analysis still farther and reach like units of energy as the base of all material existents. Indeed, two things can be related only if we can find something which they have in common; utterly unlike entities could not be related in any way whatsoever. Does this mean that the diverse objects of the world must have a single common base?

Monism is a name for the position which maintains that, in the world, unity is basic, while diversity is secondary and has to do only with the accidents, not with the basic reality of things. *Pluralism*, on the other hand, holds that while things may have sufficient similarity to make possible their interrelation in an orderly universe, yet fundamentally they are not the same, but of many kinds. To many, the difficulty has appeared to reach its crucial expression in the relations of *mind* and *matter*. Can these be regarded as basically the same? Because of this difficulty, *Dualism* has arisen. While a form of pluralism, it is yet a compromise with monism. All *material* things, it holds, may be considered

¹ For William James' interesting account of "The One and the Many," cf. his volume, *Some Problems of Philosophy*, Chapter VII. He describes this problem as "the most pregnant of all the dilemmas of philosophy."

of one substance. Likewise, all *mental* content may be regarded as of one substance. But *mind* and *matter* are too completely different in kind to allow reduction of either one to the other, or to permit reduction of both to any underlying unity. None of these positions is free from serious difficulties. If monism is to maintain that, ultimately, all is one, hence completely harmonious, it must explain how this unity ever comes to be broken into separate fragments, with diverse characteristics and antagonistic relationships. If beneath all apparent diversity there actually is harmonious unity, whence come difference and strife into our world? On the other hand, if *pluralism* is to maintain that, basically, the world is not just one, but a number—perhaps a very large number—of genuinely different substances, it must show how substances so fundamentally different also can be enough alike, or have enough in common, to permit their interrelation and interaction within as orderly a system as the universe appears to be. If, beneath apparent harmony and a capacity of things to work together, there really is disconnection and utter diversity, whence come any unity, order, or peace into the world? A further and somewhat more subtle inquiry might be made, too, as to how substances are to be conceived as different except in some *qualitative* manner. When the pluralist ascribes difference of kind to various substances, is he not, in his thought, carrying *qualitative differentia* over into the realm of substances, where they could have no significance whatsoever? If substances are not qualities or the same as qualities, how can they be separated from one another on the grounds of any kind of qualitative difference? And if we leave differences of qualitative kind out of account, *how* do substances differ? Finally, if *dualism* is to maintain that there are two substances, mind and matter, it must explain how it is possible for these two, which it asserts to be fundamentally and irreconcilably different, to interact, so that mind can produce bodily movements and carry out its “ideas” in the external world of material objects. It must explain, too, how it is possible for

body to affect mind, as it appears to do, for example, in cases of illness and injury.

One further general question must be introduced, namely, whether a substance may be divided internally into numerous self-sufficient units or centers. Must we think of a substance as indivisibly one, or may we regard it as having its being in various units, each of which, despite their common base, possesses a limited degree of self-identity and independence of one another? Both positions have been held. For example, as we shall see later, both Spinoza and Leibniz were monists in the sense that they believed in a single *kind* of substance, but whereas Spinoza maintained that this ultimate substance remains an indivisible whole, Leibniz believed that it has its being in a vast number of centers, or *monads*, which cannot affect each other directly. For this reason Leibniz frequently is called a pluralist. Thus the terms *monism* and *pluralism* when referring to substance are employed somewhat loosely with reference either to: (1) the number of substances; or (2) the number of mutually independent units or centers in which some single substance is supposed to have its being. When the Roman poet-philosopher, Lucretius, tells us that all things are composed of matter, he is a monist in the *first* sense; when he explains that this matter is in the form of solid, eternal, and indivisible atoms of varying shapes, he is a pluralist in the *second* sense.¹

¹ For literature dealing with the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER IV

MATERIALISM

I. FUNDAMENTAL CONCEPTS OF MATERIALISM

It is obvious that, taken literally, the term *materialism* must have to do with the analysis of things into their component matter, or "stuff." Regarded from the point of view of its *method*, it is precisely such analysis which philosophical materialism demands. Objects may seem to be unified things, and in ordinary thought and life we treat them as such, but in fact we know that they may be divided into parts, analyzed into chemical elements, and reduced to yet more ultimate and minute units of physics. Is it not clear, materialism asks, that if anything complex, even the world itself, is to be explained, the explanation should take the direction of an analysis of that complex thing into its simpler parts? If the explanation is to be a thorough one, the analysis must be thorough, never stopping until it has reached the simplest units of all, which have no parts and hence cannot themselves be analyzed. *The whole is to be accounted for by its parts, the higher by that which is lower, the more advanced stage of development by that which is more elementary*—it is on this fundamental assumption that materialism proceeds.

But materialism stands for more than a method of investigation in philosophy. In addition, it presents a set of conclusions. Of these, one is basic to all of the others: *The world and all that it contains are of one substance, namely "body," or "matter."* A name in itself is not very enlightening—it may hold varying meanings for different people. In the case of the term "matter" this certainly is the situation. What does the philosophical materialist wish to suggest by its use? Even here there is evident a wide diversity of meanings. Matter and motion are subjects of study for the

sciences, and their views have altered as their investigations have advanced. The materialist usually has sought alliance with the sciences, and consequently has shifted his own use of terms with the advances of scientific thought. In recent years, science has left him in a serious predicament by discarding inert *matter* altogether from the universe. But if we postpone consideration of this later difficulty and the materialist's effort to meet it, and look at the general course of materialistic thought, we find quite general agreement on at least the following characteristics:

(1) *Matter is that which is extended in space.* If anything occupies no *space*, then, perforce, it cannot be a material object. Inferred, though less often dwelt upon, is the necessity that material objects exist in time. They must not only exist *somewhere*, and themselves actually occupy a portion of space, but they must exist at a specific time, and continue through at least a small portion of time. One reason for less attention to this temporal aspect may be that it seemed less an exclusive and distinguishing mark of matter, and one shared, for example, with activities of thinking.

(2) *Matter is indestructible and eternal.* For matter to have been created would require that, in some sense, it be secondary and dependent on the *Being* which created it. For it to be destructible would require some stronger agency in the universe which could serve as its destroyer. Furthermore, it is obvious that the simplest units of matter can have no parts—or the parts would then be the simplest units, rather than the entity in which they are united. But a simple unit which has no parts cannot disintegrate. It should be noted that a less consistent form of materialism, as for example that of Thomas Hobbes, has held that God created matter, but it has insisted that matter itself is final for all *human explanation*. Science and philosophy must deal with things as ultimately material, said Hobbes, for only religious faith, not explanation, can go farther.

(3) *In order to account for the world, matter must be capable of motion.* It is by moving about, by grouping and re-

grouping in diverse combinations, that the minute simple units of matter form the manifold objects of the world. Nothing is created from nothing, and nothing which exists is ever completely annihilated. Objects are formed when their constituent elements come together, they are altered when these elements ("atoms") in some way change their arrangement, and they cease to be when their material "atoms" move away to join other combinations. Matter and motion—these, and these alone, the materialist ordinarily has regarded as necessary to account for the universe and everything which it contains.

(4) *Matter, though one in nature, exists in the form of a vast number of indivisible units, usually called "atoms."* These "atoms" of classical materialism are very different from the atoms of contemporary science. The former are thought of as the simplest and hence the smallest possible divisions in which material stuff can exist. Although they have no parts, yet by certain materialists they were supposed to possess varying shapes, sizes, and weights. Being the smallest possible units of matter, they are not individually visible to us, but are *constructions* of ours for purposes of explanation. Yet the classical materialist never doubted that real atoms of this kind do exist in the physical world. Material things may be continuously divided into smaller and smaller parts, he argued, but there must be some units which occupy space, yet which are so small and so simple that they cannot be divided—otherwise material could not have actual existence and extension.

II. ANCIENT MATERIALISM

Eucken is authority for the statement that the term *materialist* was used first by Robert Boyle in 1674.¹ But the position is much older than its name, having been one of great importance throughout the history of Greek philos-

¹ In his work, *The Excellence and Grounds of the Mechanical Philosophy*, Christian Wolff (1679-1754) frequently spoke of *materialism* and *idealism* as two forms of monism, contrasting them with dualism.

ophy. Indeed, the first problem with which the earliest philosophers attempted to deal was that of what basic material the world is composed. *Thales*, a prominent resident of the Greek colonial city of Miletus in the earlier half of the sixth century B.C., is regarded as the first philosopher because, as far as we know, he was the first to seek an account of the world in terms of reasoned *principles*, rather than of myths. To this end, he maintained that all things, since they interact with one another, must be basically of the same substance, and he devoted himself to the task of discovering what that substance might be. Conceiving it as a kind of material, he concluded that it is *water*: (1) because water is capable of assuming the forms of liquid, solid, and vapor, which fact suggested that it might readily constitute the substance of sea, earth, and atmosphere; (2) because water is essential to all plant and animal life—as he said, even the germs of all things are moist. The coming of rain clouds out of the horizon, as well as occasional earthquakes, were regarded as evidence for the belief that the earth floats on a sea of water.¹ There can be little question that such an account of the world deserves to be called materialistic. *Anaximander*, the disciple of Thales, pursued the same problem, but concluded that *water* is too definite in its properties to serve as a satisfactory substance for all things. Rather, he said, such a substance must be no single one of the known elements, but some substratum, not itself known, which underlies all. He preferred simply to designate it as the *Boundless*. Though far less naïve than Thales' conception, the explanation remained a materialistic one in the sense that the Boundless was still regarded as a something from which things are made. The follower of Anaximander, *Anaximenes*, chose *Air* as the basic substance, reintroducing

¹ We are indebted chiefly to Aristotle for our knowledge of Thales' teachings, which the former states as being: (a) The earth floats on water. (b) Water is the material cause of all things. (c) All things are full of gods. The magnet is alive, for it has the power of moving iron.

For discussion of Thales' philosophy, consult especially John Burnet's *Early Greek Philosophy*, Chapter I. Published by A. and C. Black, London. References here are to the Third Edition, 1920.

definite knowable qualities into its nature. The earth is encompassed and held together by Air, he taught, and from it all things are fashioned.¹ Succeeding philosophers offered a variety of answers to the question of what may be the ultimate substance of things. For example, *Heraclitus* (536–470 B.C.) thought of ever-changing *Fire* as ultimate substance, providing warmth to the sun and a primary condition of life to plant and animal bodies. *Parmenides* of Elea (wrote about 470 B.C.) preferred to think of it as a never-changing *Plenum*, or substance-filled space.² *Empedocles* of Agrigentum (about 490–430 B.C.) held that there are four substances: Earth, Air, Fire, and Water. All of these early views have a decidedly materialistic flavor, yet it would not be accurate to say that those who advanced them were thoroughgoing materialists. The reason for this lies in the fact that no clear differentiation had yet been made between matter and life. The confusion is illustrated in the teachings of Thales, who held not only that all things are composed of a material substance, but also that "all things are full of gods," probably meaning that all things possess a dynamic or life energy within them. Because the concepts of life and matter were not clearly differentiated in them, these early views are best described, not as materialism, but as *hylozoism*, the belief in material substances which in some sense are alive.

The separation was made clearly for the first time in the thought of *Leucippus* and *Democritus* (about 460–360 B.C.), who may be considered as the first thoroughgoing and probably the most profound of ancient materialists. Of the former, little is known, even his existence having been doubted in ancient times. He seems to have been the founder of a school at Abdera, which later was attended by Democritus, and there is good reason to suppose considerable

¹ "Just as our soul, being air, holds us together, so do breath and air encompass the whole world." The term *air* was employed, prior to Empedocles, to include vapor and mist, which were condensed air, and even darkness, which was regarded, not as a shadow, but as a kind of air.

² With reference to these theories of *change*, cf. Chapter X.

similarity in the views of the two men. We do possess knowledge of Democritus, though a great part of his own numerous writings have been lost. Among ancient materialists, two other names are of especial significance: *Epicurus* and *Lucretius*. Epicurus (341-270 B.C.) probably should be regarded as the most prominent Greek philosopher after the time of Aristotle. While he is thought of most often in relation to his ethical system, this system, with its emphasis on pleasure, rests on the foundation of his materialistic metaphysics. Lucretius (94-55 B.C.), with Virgil, Horace, and Catullus, stands as one of the immortal poets of Rome. In his principal work, *De Rerum Natura*, he attempts to impart something of the insight and inspiration which he had received from the teachings of Epicurus, but his contribution is by no means without originality. The teachings of these three major materialists of the ancient world may be summarized with relation to their agreements and differences regarding certain crucial issues.

i. All Things May Be Reduced to Matter and Motion.

On this proposition, all three are agreed. All the varied characteristics of things are but secondary. They are but the appearances which things make to us. If any one of these things, including our own bodies or minds, be regarded carefully, it will be found that in fact they are nothing but material, arranged as it is because of motion. This is equivalent to saying that all *qualitative differences* in things may be reduced to and explained by *quantitative differences*. Thus Democritus is reported to have said: "By convention sweet is sweet, by convention bitter is bitter, by convention hot is hot, by convention cold is cold, by convention color is color. But in reality there are only (material) atoms and the void. That is, the objects of sense are supposed to be real and it is customary to regard them as such, but in truth they are not. Only the atoms and the void are real." With this conclusion, Epicurus and Lucretius are in agreement, the latter insisting that "All nature, as it is of itself, is built on these two things:

for there are bodies and the void, in which they are placed and where they move hither and thither. . . . Besides these there is nothing which you could say is parted from all body and sundered from all void, which could be discovered, as it were a third nature in the list.”¹

2. Matter Exists in the Form of Eternally Independent Units or Atoms.

If the world is to be formed and constantly in some measure reformed out of matter, it is necessary that this matter exist in the mode of particles which may group and regroup themselves in various configurations. These atoms have three characteristics in common: (a) being simple, they are indestructible—“it is impossible,” says Epicurus, “but that in the dissolution of combined bodies, there must be something which continues solid and indestructible, of such a kind that it will not change either into what does not exist, or out of what does not exist;”² (b) as material bodies, however minute, atoms must occupy space; (c) all atoms move in space. Beyond such agreement, the atoms have wide variations. For example, they are described as being of innumerably varied shapes. Indeed, it is this variety of shapes and the ragged edges of the atoms which are thought by our authors to constitute a basis for their attachment in the combinations that constitute the varied objects which we perceive. “The atoms which form the bodies,” says Epicurus, “. . . assume an incalculable variety of forms, for the numerous differences which the bodies present cannot possibly result from an aggregate of the same forms.”

3. All Conscious Life Consists in Motions of the Atoms.

Since only atoms and space really exist, the soul or mind can be of no other kind. It, too, is composed of atoms, as

¹ Lucretius, *On the Nature of Things*, Book I, lines 418 ff. Translated by C. Bailey. Oxford Press, 1910.

² From Epicurus’ letter to Herodotus. Cf. Diogenes Laertius, *Lives*, Yonge’s translation.

are our images and ideas, though these are, indeed, the smallest and smoothest of all atoms. Atoms can affect one another only by direct contact. Hence every perception of an external object must involve actual contact between its atoms and those of the soul of the observer. This is achieved through the tendency of objects constantly to emit very minute atoms from their surfaces, in the form of images of themselves. These travel through space in about their original order of arrangement, shrinking together as they go. On meeting the eye, these images are conveyed within. By physical contact with the soul-atoms they give an impression of the original form of the objects from which they came. On the other hand, such qualities as color, taste, sound, and odor are not in the atoms themselves, and hence they are not in real external objects. They are results *in us*—they are what we *feel* on experiencing an object. The relatively coarse images of physical objects set the fire-atoms of the soul in violent motion. Much to be preferred to this experiencing of physical things, Democritus points out, are the gentle motions produced by those finest of images—the images of thought. But since the latter can exert their influence only when the former are subdued, it is better to turn attention away from the world of the senses, he advises, and towards that of meditation.

4. All Motion Is According to Fixed Law: There Is No Chance in Nature.

Unlike the points hitherto suggested, we here find disagreement between our authors. Democritus, possessing a mind of extraordinary scientific insight, developed a subtle doctrine of *natural law* which left no place for chance in the physical world. Epicurus, lacking equal penetration, inconsistently accepted a mechanical view of nature, but saw no reason why it might not contain exceptions and chance. Indeed, the creation of the world itself was attributed by him to the fact that in falling through space, certain atoms deviated voluntarily from their course, collided with one

another, and so built up the combination which we experience as the world. Lucretius here followed Epicurus, rather than Democritus, explaining that "when first-bodies (*i.e.*, atoms) are being carried downwards straight through the void by their own weight, at times quite *undetermined* and at *undetermined* spots they push a little from their path; yet only just so much as you could call a change in trend. But if they were not used to swerve, all things would fall downwards through deep void like drops of rain, nor could collision come to be . . . so nature would never have brought aught to being."¹

5. The World Is without Intelligent Purpose or Divine Ruler.

Whether by natural law or chance or swerve, by all of these authors the atoms are held to have come together of their own accord, with no intervention by a Deity. It is admitted that the gods may exist, but they are far removed from our world, and have no part or interest in it. Epicurus, in particular, emphasizes the futility of religious belief, attacking vehemently the expectation of immortality. Man is a collection of atoms. At death, he insists, these atoms, themselves indestructible, leave their combination in the body and unite in other combinations. There is no need to fear death or the tortures of another world. While we are alive, death is absent and cannot harm us. When we are dead, we ourselves have no sensations, either of pain or pleasure, but simply *are not*—hence death cannot harm us even after it has come. Why should we fear anything when it is not present, he asks, if we realize that when it does come, we shall be no longer, and therefore will care nothing about it?

¹ Lucretius, *On the Nature of Things*, Book II, lines 216 ff. Translated by Bailey. Published by the Oxford Press, 1910.

It may be noted that the Stoics followed Democritus in his insistence on natural law and necessity, for which reason they are sometimes called materialists. But their distinctive doctrine of Reason and their ethical views seem to the writer to make such a classification unjustifiable.

III. MODERN MATERIALISM

If we turn from classical expressions of materialism in the Ancient World to those in the Modern, it is to witness the development of the view from a dogmatic doctrine to something akin to an agnostic one. By gradual stages, not only has *matter* disappeared from scientific accounts of nature, but also it has lost definiteness of meaning in materialistic philosophy itself, until it has come to be little more than a word, employed to designate an unknowable substratum in things. Materialism has been forced to place less and less significance on the particular kind of basic *stuff* from which things are composed, and to turn its emphasis to a set of characteristic principles having to do chiefly with their *structure*. Indeed, it is questionable whether "materialism" is a suitable designation for any present philosophical position.¹ The course of this development has been due, not only to changes in scientific conceptions, but to the presence of certain elements inherent in materialistic philosophy itself.

In the very brief consideration possible here, it may be well to seek the fundamental principles of modern materialism as they are expressed by three representative thinkers. One should be the British philosopher, *Thomas Hobbes* (1588–1679); a second, the virtual founder of French materialism, a philosopher and physician, *La Mettrie* (1709–1751); the third, the most influential of the more recent materialists, a professor of zoölogy at Jena, *Ernest Haeckel* (1834–1919).²

i. The Ultimacy of Matter and Motion.

If these three philosophers be compared with respect to their conceptions of the sense in which matter and motion

¹ Bertrand Russell, speaking of newer views in science, remarks: "Materialism as a philosophy becomes hardly tenable in view of this evaporation of matter." *Philosophy*, p. 159. Published by W. W. Norton and Company, New York, 1927.

² Cf. especially the following of their writings: Hobbes, *De Corpore* and *Leviathan*; La Mettrie, *Man, A Machine*; Haeckel, *Riddle of the Universe*, *The Evolution of Man*, and *The Pedigree of Man*. Cf. also a reply to Haeckel—Sir Oliver Lodge's *Life and Matter*.

For a classic treatment of materialism, the reader is referred to Albert Lange's *History of Materialism*.

are the ultimate basis of all things, some difference of opinion will be noticed. The materialism of Epicurus had been revived at the beginning of the modern era by *Gassendi* (1592–1655), but with one important alteration—God was introduced as the creator of the atoms. Clearly such a change was a giving up of wholehearted materialism, at least in metaphysics. Hobbes accepted a similar position. He started bravely enough by insisting that “All that exists is body, all that occurs is motion.” But he modified this statement by saying that he regarded it as the principle on which philosophy should proceed, rather than as the ultimate truth about the world. Since God was not created but is eternal, His Being lies outside the realm of scientific and philosophical inquiry. Philosophy, he held, is concerned solely with the study of nature. That which belongs to God beyond this realm is not a matter for explanation, but for religious faith. Philosophy has nothing to do with it, and must leave it out of consideration. Thus, though the world may have a *purpose* in the mind of God, man is not capable of dealing with final causes and the ultimate nature of things, and for him to introduce such a notion as purpose into his explanations is merely misleading. For human accounts of things, *body* must be regarded as the sole substance—the idea of bodiless or *spiritual* substance is a contradiction.

La Mettrie is not concerned with such a separation of human explanations from ultimate reality. But with respect to the nature of things themselves, he maintains the validity of Hobbes’ declaration against spiritual substance: Man does not differ from plants and animals in fundamental nature, he held. He possesses no unique psychical or soul substance. The whole order of nature displays a graduated series. Higher forms are developed from lower. The cause of their development is not to be found in differences of substance, but in the presence of *want*. Man possesses a higher nature than other creatures because his more elaborate wants have led to its development. Had he been content with what satisfies a vegetable, he would have de-

veloped no higher powers than have the vegetables. La Mettrie does not explain *why* man did want more than did the vegetables. But he is confident that all things are of one substance, *matter*, which appears in constantly changing forms. It is because the soul is material, he explains, that enthusiasm heats us and bodily fever causes delirium. Likewise Haeckel, attempting a materialistic interpretation in the light of the more enlightened science of his day, finds support in the chemical and physical laws of the *conservation of matter* and of *energy*. The sum of matter which fills infinite space, and the sum of work, he insists, produce all things and themselves are unchangeable. As all varieties of energy—heat, light, electricity, etc.—are forms of one energy, and all forms of matter are fundamentally alike, so both matter and energy themselves ultimately are reducible to a more primitive simple substance, “which fills the infinity of space in an unbroken continuity.” Matter and spirit, similarly, are but forms of this basic stuff. The passion which draws Paris to Helen, he points out, is a form of the same energy which unites atoms of hydrogen and oxygen in a molecule of water.

2. The Knowability of Matter.

For both Hobbes and Haeckel, matter itself is unknowable. The former admits that our knowledge of bodies is not gained by directly perceiving them—by the senses we perceive only their qualities. These qualities, with the bare exception of extension in space and motion, are not actually in the bodies themselves, but arise from *our reactions* on perceiving the bodies. If this be true, it might seem that we may as well turn honest sceptics and admit that we know nothing of things as they really are. But Hobbes declines to accept this sceptical position. Instead, he falls back upon his own first *definition* of the nature of things, insisting again that in fact, or at least *for us*, all things are bodies in motion.¹

¹ For Hobbes' description of the process by which we come to perceive external objects, cf. his *Elements of Philosophy concerning the Body*, Chapter XV. Also cf. *Leviathan*, cap. 6.

Haeckel seems more consistent when he says that though we may call the ultimate substance behind all material things and all energy, *matter*, yet the real nature of this final substance is unknown and unknowable. But his consistency is bought at the price of virtually giving up the central doctrine of materialism itself. La Mettrie found no difficulty in the problem of knowledge. Our thoughts, he held, are modifications of matter—though very small quantities since so many can lodge in the brain.

IV. THE PRESENT CONCEPTION OF MATTER

Matter was formerly regarded as something solid, which occupies space and possesses inertia and weight. Today we know that matter, as a solid inert *stuff*, is a fiction of the human mind. Whether there is any fundamental substance in things, we do not know, for the reason that scientific analysis can carry us no farther than to a group of activities and *effects*. To us, these *effects* give the impression of a world of substantial objects, but in fact their source is not such objects, but a great number of *events* which are transpiring in the physical world. Whether or not these events involve any kind of substantial nucleus within or behind them, is merely a matter of conjecture. It is unnecessary for our purposes to enter in detail into the scientific study which has brought about the present conception. Two conclusions, however, are of primary importance: one of these has to do with the nature of "material" objects, and the other with the nature of the atomic units which compose such objects.

1. Even by certain of the ancient atomists, it was held that the atoms which compose a body are separated by empty space, thus accounting for variations in the hardness of things. But more recently, the actual amount of intervening space has been found to be enormously greater than any had supposed. "If we eliminated all the unfilled space in a man's body and collected his protons and electrons into one mass, the man would be reduced to a speck just visible

with a magnifying glass.”¹ The discovery of radio-active elements late in the nineteenth century showed that the atom is not an inert, indestructible diminutive “billiard ball,” but a complex organization of energy. It was not until 1911 that the physicist Rutherford pointed out that the atom has widely separated units moving within it, and is analogous rather to a *solar system*.

2. The modern atomic theory of matter was developed first in chemistry, and owes its origin mainly to the English chemist, John Dalton. It was found that material things are composed of a number of elements—now supposed in all to be 92. Compounds were found to be made up of *molecules*, which in turn were composed of atoms of the same or various elements. These atoms were thought to be unchangeable, and consequently indestructible. The *atomic number* of an element determined its place in the series of the 92 elements (hydrogen coming first with the atomic number 1 and uranium last, with the atomic number 92). With the discovery of radio-activity, however, it was found that atoms of a radioactive element *can break up*. Furthermore, it was found that numerous supposed *elements* are but combinations of *isotopes*—or elements having the same place on the scale. Clearly, the conclusion must be that the atom is not a solid or unchanging unitary entity, but an organization of simpler parts. These were designated as of two kinds, known to us by the familiar terms *electrons* and *protons*.

Thus the view now generally accepted² is that “matter” in all of its forms is composed of electrons and protons. The former carry a negative and the latter a positive charge of electricity. Since the proton has 1840 times the mass of the electron, it is chiefly responsible for weight in objects. Except in hydrogen, the nucleus of the atom is composed of protons and a smaller number of electrons. Other electrons,

¹ A. S. Eddington, *The Nature of the Physical World*, pp. 1-2. Published by The Macmillan Company, New York, 1928.

² Formulated in its main lines by Rutherford and Bohr.

to a number sufficient to balance the protons, move about the nucleus "like remote satellites."

Though these and many other descriptive details might be given of the inner structure of the atom, it must be remembered that they are not gained through any direct observation of the minute entities themselves, for, of course, they are much too small for such observation. The diameter of an electron has been stated to be about one fifty-thousandth of the diameter of an atom. Elliot offers an imaginative illustration: "Supposing the amount of water that can be contained in a small thimble were magnified to the size of the entire earth, the *molecules*, which we should then be able to see, would appear about the size of footballs."¹ Electrons and protons, of course, would be vastly smaller. Our only knowledge of such diminutive entities must come from inference from their *effects*. That which we cannot see may yet be constructed and employed to explain that which is visible in ordinary experience. *We see only what the atom does*—what may be its nature when it is doing nothing perceptible, or what it is in itself, we have no way of knowing. Indeed, knowing only these effects, the entity behind them is for us no more than a *symbol* for them, or an assumption which makes them intelligible. And it is as a symbol, rather than as a definite substance, that physics treats its concept of the atom. More recent work in physics² has tended to deal with the atom purely in terms of the radiations which come from it. Bertrand Russell describes this point of view: "In Bohr's theory, the planetary electrons are supposed to describe orbits over and over again while the atom is not radiating; in the newer theory, we say nothing at all as to what happens at these times. The aim is to confine the theory to what is empirically verifiable, namely radiations; as to what there is where the radiations come from, we cannot tell, and it is scientifically unnecessary to speculate. . . .

¹ Hugh Elliot, *Modern Science and Materialism*, p. 45. Published by Longmans, Green and Company, London, 1927.

² Especially that of Heisenberg and Schrödinger.

The electron ceases altogether to have the properties of a 'thing' as conceived by common sense; it is merely a region from which energy may radiate." Lord Russell adds: "The main point for the philosopher in the modern theory is the disappearance of matter as a 'thing.' It has been replaced by emanations from a locality—the sort of influences that characterize haunted rooms in ghost stories. . . . All sorts of events happen in the physical world, but tables and chairs, the sun and moon, and even our daily bread, have become pale abstractions, mere laws exhibited in the succession of events which radiate from certain regions."¹ Poincaré describes this modern conception of the electron: "Thus the electron must be regarded as a simple electric charge without matter. Our first investigations caused us to ascribe to it a mass one thousand times less than that of an atom of hydrogen; a more careful study now shows us that this mass was only a fiction. . . . The electron is thus simply a definite small volume at a point of the ether, which possesses special properties, and this point is propagated with a velocity, which cannot exceed the velocity of light."²

V. DIFFICULTIES Now FACING MATERIALISM

In view of this disappearance of *matter* under the scrutiny of physics, what is materialism to do? To cling to belief in an assumed unknowable *something* from which radiations come is scarcely satisfying, and may prove highly precarious, since there is no reason, beyond the assumption in the materialist's thought, for believing that radiations actually do proceed from any *thing* whatsoever. As we know them, *things* are but human ways of experiencing *events*. Is there any ground for holding, then, that in nature itself there are substantial *things*, and not merely activities and events?

¹ Bertrand Russell, *Philosophy*, pp. 105-106. Quoted by permission of the publishers, W. W. Norton and Company, New York, 1927.

² Lucien Poincaré, *La Physique moderne*, p. 249. Quoted also by E. Cassirer, *Substance and Function*, pp. 164 ff. Translated by W. C. and M. C. Swabey. Published by The Open Court Publishing Co., Chicago, 1923.

Cf. also E. Meyerson, *Identité et Réalité*, pp. 228 ff.

Even if we assume the reality of some substantial stuff—*matter* if we choose so to call it—behind radiations of energy, still it is these radiations which constitute the world as we know it and as it exists for us. The substance behind must remain an *unknowable* entity, which can provide no aid whatsoever to us in understanding the world or in living in it. We might as well call it “X” as to call it “matter” since we know and can know nothing of it—not even the way in which it produces the radiations which are the order and basis of our world. Indeed, we might better call it “X” than “matter,” for the latter has many common characteristics in our thought, which could not easily be cleared away to leave a complete blank. As Professor Perry remarks, matter “is too well-known in its private capacity to play becomingly the part of Universal Being. Common sense has a comparatively clear image connected with the term,” and “. . . recoils from the notion of a matter that shall not be hard, discrete, and extended.”¹

Much of this the contemporary materialist acknowledges, but for him the significance of the position no longer lies primarily in its insistence upon an extended, indestructible *stuff*, but in its protest against (1) the separation of the activities of consciousness from other activities of nature—man is regarded as thoroughly and completely a part of the physical world. Events known as mental processes, such as feeling and thinking, are not different in *kind* from the events going on in all the animate and inanimate world. In the course of evolution, man has developed a particular form of organism, capable of consciousness, but the activities of conscious life are but a highly differentiated form of that more widespread activity which pervades and *is* nature. (2) The modern materialist is interested in protesting against belief in any purpose or intelligent God directing the universe. All things proceed by law, but it is the law of nature itself, not an order imposed by a Superior Being, Value, or Purpose.

¹ R. B. Perry, *Present Philosophical Tendencies*, pp. 69–70. Published by Longmans, Green and Company, New York, 1921.

The answer which must be given is a simple one. In so far as the conceptions of the present-day materialist depend upon the acceptance of *matter* in the older sense, they are sadly out of date, and have been shown by the sciences to be groundless fictions. In so far as they do not depend upon this conception of matter, but emphasize the doctrine of a particular kind of *order* and activity in nature, they have to do, not with a material substance at all, but with a view of *structure* and *relations*. Now here they are merely repeating the views of *naturalism*—a more profound and philosophically more adequate theory. As a serious philosophical position, materialism is gone. One who claims to be a materialist in our day must either be vowing allegiance to a discredited scientific view, or using another name when his real meaning as we later shall see, is that he is a *naturalist*.¹

¹ For literature having to do with the subject-matter of this chapter cf. bibliography at the end of the book.

CHAPTER V

COSMIC DUALISM

I. FORM AND MATTER

Any philosophical position which regards the world as being constituted of two basically independent elements or systems may be classified as a form of *dualism*. There are many ways in which the world may be divided, in our thinking, into two parts and, conceivably, any one of these divisions might be regarded as fundamental by someone, and made the basis of a new dualistic philosophy. In fact, however, there is no great diversity, but quite general agreement among dualists as to where ultimate separation lies. For although we may encounter manifold cases of separateness and difference between things, few of these divergences prove to be so complete and impressive as to suggest to anyone that they represent a fundamental rift, which severs the universe into two distinct domains. Nevertheless, there do exist certain kinds of diversity which, at least to the dualist, appear to give ample evidence of two mutually independent, if not actually conflicting, elements in its nature. Among these forms of diversity, we may note, first, that of *form* and *matter*.

Primitive man was deeply impressed by the presence of *opposites* in nature. Day and night, heat and cold, dryness and moisture, hardness and softness, strength and weakness, male and female, life and death—how is such diversity to be accounted for? Resorting to myth, he contented himself with personifying these things as beings whom he could imagine linked together by fraternal or marital ties, or joined as enemies in perpetual conflict. Such explanations could not serve the early philosopher, bent as he was upon learning the *principles* of things. But though the more

primitive solutions might be swept away in disdain, the problem of difference and conflict in nature remained to perplex him. Desiring systematic explanations, it was necessary that the philosopher group together, as far as possible, the particular objects which he was engaged in studying. Rather than seeking particular explanations for each case of opposition, he turned his attention to the discovery of principles in the general nature of things which might be responsible for producing opposition in the world.

Earlier efforts among the Greek philosophers got little farther than the formulation of somewhat fanciful accounts in terms of some pair of elements or forces, supposed to be ultimate in the cosmos. For example, *Anaxagoras* (500—later than 430 B.C.) poetically described the beginning of the world. Original chaos, in which the elements were mixed without form and without motion, was transformed into the orderly cosmos by the coming in of *Nous* ("Reason-stuff" or "Mind"). It is this *Mind-stuff* which provides the principle of life and which continues to rule wherever order is dominant. Thus it, on the one side, and the other elements on the other, constitute the world. But both were treated as two distinct kinds of material, so far as their characteristics and activities were concerned. At the same time, *Empedocles* (about 490–430 B.C.) offered a dualistic account of the *forces* which rule the cosmos. These, he taught, are *Love* and *Strife*, which are in constant conflict, and alternately advance and retreat in their conquest of the world, bringing with them, respectively, a reign of peace and harmony, or a period of discord and disintegration. Earlier than either of these philosophers, and hidden in part by a veil of mystery, was another dualist, *Pythagoras* (about 580–500 B.C.). In his doctrine of creation, two ultimate entities are found, *Limit* and *Unlimited*, probably corresponding to fire and air.¹ In itself, this account has little of distinguishing sig-

¹ For discussion of the systems of Anaxagoras, Empedocles, and Pythagoras, cf. J. Burnet, *Early Greek Philosophy*, Chapters V, VI, and VII. Also R. M. Scoot, *Greek Philosophy before Plato*, Chapters III, VI, and VII.

nificance, but linked with it was another conception, also dualistic, which is of genuine importance despite the fanciful applications given to it by the Pythagoreans themselves. All things, it was said, represent or imitate numbers, and are in numerical relationships to one another. In order to produce notes of music related in the order of a scale, it is necessary for the length of strings on a lyre to be in a numerical ratio to one another. Similarly, the whole order of the world as we experience it arises from and represents a numerical order in the structure of things. However poorly understood by Pythagoras himself, there had here been made a differentiation between the things of ordinary experience and an order of mathematical relationships underlying and determining their structure. The Pythagoreans' attempt to assign definite numbers to things, and to account for opposition on the basis of whether these numbers were odd or even, was naïve. But, as so often happened in early speculation, naïveté was joined with profound insight. Objects related in the physical world, they held, *imitate* numbers; however diverse in their appearances, they express a common order of forms. It would not be difficult to predict that the development of this idea would lead to recognition of a *dual nature in all physical objects*. On one hand, are they not separate things, with individual characteristics, and, on the other, are they not imitations or expressions of an order of forms which belongs not to them alone, but to the entire universe? It was this duality of form and matter which most interested Greek philosophy in its more mature stages, and we well may pause briefly to consider its nature.

Everyone is familiar with the conception of objects which regards them as possessing both material content and a form. The two seem inseparable—to do away with either would be to destroy the physical object. Matter is organized in the forms of books and tables, trees and rocks, mountains and oceans. If these and all other forms were to be removed from it, matter could be no more than a mass of elementary

units, whatever *they* may be. Matter would then constitute nothing—it would be mere stuff, waiting to be *formed* into something. Conversely, if forms be left and matter be removed, the physical object could not continue to exist, though we might retain an *idea* of it. Common sense is likely to view matter and form thus as two necessary and equally real aspects of the same thing. But if we examine them more closely, it is to discover striking differences.

I. Universality of Forms.

So far as our experience can inform us, matter always is found organized in some form, whereas we may think and talk of forms without reference to any material content. We cannot actually think of matter which is not in some form—if we could, since it would be nothing in particular, there would be nothing to think or to say about it except what it was *not*. Forms, on the contrary, make a most interesting and lively subject of thought and discussion for mathematics, which virtually deals with nothing else. Angles, planes, and curves in geometry, the symbolic calculations of algebra and calculus, and even the numerical manipulations of arithmetic—these have reference not to any single objects or relations in the physical world, but to general forms of structure and relationship which *many* things may possess. Their truth and reality, indeed, is not affected by the fact that they do or do not find physical expression. The fact that the angles of a triangle are equal to 180° is in no way affected by the presence or absence of triangular objects in the world. Two objects, when added to two other objects, make four objects, and it matters not at all whether the objects be bacilli, elephants, or stars. The form is true regardless of the presence or absence or kind of content. It is not only in mathematics, however, that forms may be considered apart from specific content. All classification in the sciences proceeds by grouping particular phenomena according to a form which has been set up as the basis. It may be that the scientist has discovered

the form by observing particular objects, but before he can make a scientific classification, he must consider it abstractly, and apart from these. To classify is to assume that the same form is to be found in numerous particular things. As he continues his work of systematizing, relating species with species, or developing general equations for chemical reactions, his work becomes increasingly a study of forms. The advanced investigations of modern physics have come to be so exclusively engaged with forms as to become inseparable at many points from mathematics.

Not only in the sciences but in ordinary affairs of life we very frequently deal with forms independently of matter, but never with matter as independent of form. Almost anyone could tell us, more or less specifically, what he meant by a good orange. If less easily described, he nevertheless could point out individuals whom he regarded as interesting, or beautiful, or fair-minded people. This could be only if he has in mind some pattern by which to measure and compare. To judge this orange to be good, another to be poor, he must have an idea not merely of this or that orange, as specific fruit, but also an idea of what constitutes an orange—any and every orange, as such. That is he must have not merely ideas of particular oranges, but also a *universal idea of orange*. Likewise, there must be the idea of what constitutes an interesting, a beautiful, or a fair-minded person if he is to classify individuals with reference to these characteristics. Clearly, this ideal orange, or this ideally just person, may never be found to actually exist in the world. They are universal forms, more or less adequately expressed, in various physical embodiments which he experiences. To be an orange at all, a particular body of matter must express the universal form of orange—it must embody *orangeness*, or that which makes *any* group of atoms an orange. To be a *good* orange it must express this form more adequately than do certain other bodies of matter which have the same general form. Thus all of our classifications, all of our names which have application to classes

or pluralities of objects, stand in our minds for characteristics of form. If one asks a vender for *a dozen* oranges, it is with the anticipation of receiving twelve distinct and separate physical objects, but twelve objects which all possess the same general form. Thus, when we talk of things in terms which suggest classes or pluralities of any kind, it ordinarily is not their individual material, but their formal characteristics, which we have in mind.

2. Reality of Forms.

The form has been regarded frequently as *more real* than the matter of things. By this, it is not meant that the matter does not exist, but that it is dependent on form for whatever it may be. Physical existents come and go. The matter which they contain may join in other combinations, but the form it is pointed out, remains unchangeable and eternal. For example, I may own a house, in which certain of the rafters meet one another—at an angle of 78° . They possess other geometrical and physical qualities. If the house burns, the matter which earlier had the form of rafters now takes on the forms of ashes and gases. But the angle 78° and all of the other geometrical relations which the house once expressed remain quite unaffected by the conflagration. Man may discover such formal relations in nature, but he cannot alter them.

Further, forms are regarded as more real than matter in the sense that it is they which make all things what they are. The same atoms or electrons may enter indifferently into the body of a sea monster, a human being, or a shooting star. It is their forms which differentiate and characterize all things. Hence the world is what it is because of its form—as *a world*, it is its form. This general position has led to a tendency, very strong in human thought, to contrast physical things, with their brief and changing course of existence, and eternal things—the imperishable forms of an eternal order. The eternal world is thought of as free from matter; a realm of pure mind or spirit. The temporal world is one

PHILOSOPHY

vitated by the presence of cumbrous matter, which in itself is meaningless—mere non-being—and which never can express the eternal forms adequately. Truth, Beauty, Goodness, of such eternal forms we know a little, but our knowledge is limited by the sluggish resistance of the material element through which they find their expressions.

II. THE DUALISM OF PLATO

Doubtless, it has been realized already that to a considerable degree the foregoing description of the dualism of form and matter presented very summarily an aspect of the position of *Plato*.¹ The philosophical system of Plato everywhere shows the influence of mathematics, as that of Aristotle gives continual evidence of biological training and interest. The world of geometry, we have seen, is an ideal world—that is, there is no matter in it or required for its being; it is a world of *ideas*. This does not mean that the facts of geometry have being only in people's minds, for

¹All men, said Coleridge, are either Platonists or Aristotelians—and, we may add, Aristotle himself was long Plato's pupil and associate.

Plato was born in Athens in the year 427 B.C. His family was one of wealth, position, and distinguished ancestry. His early attention was devoted to literature, but coming under the influence of Socrates, this was abandoned for philosophy, and he became, as Windelband aptly says, Socrates' "truest and most intelligent, and yet at the same time his most independent disciple." After the execution of Socrates, he left Athens, visiting Megara, Cyrene, and Egypt. After a sojourn in Athens, he again left, this time (390) going to Magna Graecia and Sicily. Here he was related not only to philosophical but also to political adventures undertaken by the Pythagorean group, and was delivered to the Spartans as prisoner of war. About to be sold into slavery, he was ransomed by a friend. Returning to Athens, he founded his famous school, the *Academy*, where he lectured through most of the remaining years of his life.

His writings always, with a single exception (the *Apology*), are in dialogue form. Among them are some of the highest expressions of literary art attained in any field (especially the *Phædo*, *Symposium*, and *Republic*). There is room for considerable disagreement on the chronological order of his chief works, and in a few cases on their real author. His writings include: *Apology*, *Crito*, *Euthyphro*, *Lysis*, *Laches*, *Charmides*, *Hippias Minor* and *Major*, *Protagoras*, *Gorgias*, *Euthydemus*, *Cratylus*, *Meno*, *Theætetus*, the *Laws*, *Timæus*, *Critias*, *Sophist*, *Parmenides*, *Politicus*, *Phædrus*, *Symposium*, *Phædo*, *Philebus*, and, above all, the *Republic*. Those interested in pursuing this subject should consult: A. E. Taylor, *Plato, The Man and His Work*; also, *Plato* (a brief work); P. Shorey, *The Unity of Plato's Thought*; P. E. More, *Platonism*; W. Pater, *Plato and Platonism*; E. Zeller, *Plato and the Older Academicians*; C. Ritter, *The Essence of Plato's Philosophy*.

they may be assumed to hold on the other side of the moon, or the outermost parts of the universe, or in the world before people existed to inhabit it. Rather, it means that they are of the same nature as ideas: immaterial, logical in their order, and capable of being understood and dealt with by a particular human mind even though never actually perceived by the senses in the external world. Now these geometrical ideas—circles, right angles, squares, parabolas, and the others, do exist in imperfect ways in the material world. But this physical embodiment of geometrical figures is always imperfect; we never draw or find or in any way observe through the senses, a perfect circle or a perfect square. I may *know* that any point on the curve of a parabola is equally distant from its directrix, a given straight line, and from a *focal point*, but my certainty comes not from past observation of parabolas, but from the idea of a parabola as a pure form.—It is this ideal form which is *the parabola*, and all approximations to it in the physical world are parabolas only because and in so far as they express or imitate it. It is unnecessary to consider here the more intricate problems which arise around the exact status of mathematical relations in Plato's view of the world (*e.g.*, in the discussions of the *Philebus*). But it is clear that in some sense the real entities of mathematics are perfect and eternally unchangeable, while their embodiments in the physical world are imperfect and transient. Since all physical objects depend for their shapes on geometrical properties such as line and curve, plane and cube, they may be described as matter in these forms, or as *mixtures* of matter (or "unlimited" space) and mathematical forms.

Now things possess other characteristics than shape. They are of varying colors, flavors, and odors; they are particular kinds of objects with certain meanings—books, tables, chairs, etc.; they also may be beautiful and ugly in varying degrees, or good and evil. No object is so red that it may be regarded as *redness* itself, or so sweet as to be thought of as pure *sweetness*. Likewise, no objects or per-

sons are so beautiful or good as to warrant their being looked upon, not as beautiful or good *objects* or *persons*, but as *beauty* or *goodness* itself. In our experience, we never find pure redness or sweetness, or beauty, or goodness, as we do not come in contact with pure tableness or bookness. Our world of experience seems to contain only numerous and varied partial embodiments of them. That they are real is shown by these partial expressions, but they themselves are pure forms. They must have their being in the world of forms or *ideas*, rather than of physical existents. Because they are ideas, we may know them, and classify objects in terms of them. Particular books and tables may burn; particular persons may lose their beauty or their goodness—but though all books and tables were destroyed and all people grew ugly and malicious, the ideal forms of these things would not change. They merely would cease to have expression in the physical world. Everything is what it is because of the forms or ideas which it embodies. They are the realities; in them is true Being. All things in our world of experience are shadows or imitations of the real world of *ideal forms*. Thus we have the dualism in Plato's thought of a world of real being and a realm of non-being; of an eternal and changeless order and a transient domain where birth and death and change pervade the flux of events; of a realm of pure forms and a realm of physical existents.

It is not strange that the world of our experience, uniting these two orders should prove to be a paradoxical and perplexing one. Nor is it strange that men usually should fail to differentiate clearly the eternal from the passing, the real from the merely apparent aspects of things. It is the part of wisdom and the chief task of philosophy, Plato believed, to make this separation carefully, and then to search into the nature of the real. "The true lover of knowledge is always striving after *being*—that is his nature; he will not rest in the multiplicity of individuals, which is an appearance only." ". . . Philosophical minds always love knowledge of a sort which shows the eternal nature not varying from

generation and corruption." Such a one must be devoted wholeheartedly to the pursuit of truth, embodying pre-eminently the nature of the ideal world in himself. "There should be no secret corner of illiberality; nothing can be more antagonistic than meanness to a soul which is ever longing after the whole of things both human and divine." Further, says Plato, "You will observe whether a man is just and gentle, or rude and unsociable; these are the signs which distinguish even in youth the philosophical nature from the unphilosophical."¹ For it is a "well-proportioned and gracious mind" which moves naturally and "spontaneously towards the true being of everything." The reason for harmony between such a mind and the real world is to be found in the fact that this real world is not ultimately one of cold mathematical forms—these are real but subordinate. The real world is revealed most fully, Plato believed, not in such characteristics as shape or color, but in *values*. The world has purpose in it. That purpose is the realization of certain values—ultimately these are three, but an inseparable three: *Beauty*, *Truth*, and *Goodness*. All other things have their ultimate reason for existence in their capacity to express and serve these. That which in no degree possesses truth or beauty or goodness is a mere negative in the world's order. It is in terms of these that we know things—that which was totally ugly, totally evil, and totally false could mean nothing to us. But as anything reflects *Beauty*, *Truth*, and *Goodness*, it becomes a visible and useful part of our world. "The soul is like an eye;" says Plato, "when resting upon that on which *truth* and *being* shine, the soul perceives and understands, and is radiant with intelligence; but when turned towards the twilight of *becoming* and *perishing*, then she has opinion only, and goes blinking about, and is first of one opinion and then of another, and seems to have no intelligence."

Thus we live in two worlds, Plato teaches: the world of opinion and the world of knowledge, or, as he terms them,

¹ *Republic*, Book VI. Translated by Jowett.

the *visible* and the *intelligible* worlds. In the former, on the one hand, we find the reflections and images of objects, such as shadows and reflections in water. These are less *real* than the objects which they reflect. The latter constitute the other and higher division of this visible world. The intelligible world, likewise, has two divisions: thought images and pure principles. We may *understand* things in terms of specific ideas gained from them, or we may *reason* about them in terms of the basic principles behind their particular natures. The principles are eternal, unchanging, and hence more real than their numerous fluctuating expressions. Plato suggests that the relation of these divisions may be illustrated by dividing a vertical line into two parts, the lower part representing the visible, and the upper the intelligible worlds. If each of these parts is again divided in two, the lowest part of all will represent the position and degree of reality of *shadows and reproductions* of objects. The second (and highest in the *visible* world) will represent *bodies* which can be seen, touched, or otherwise perceived by the senses. The third division in the total line (and lowest in the *intelligible* world) will represent *ideas gained from sense experience* regarding the characteristics of the various objects about us. The fourth and highest division of all must then represent *principles or pure ideas*, viewed by reason without reference to any sense experience.

III. MIND AND MATTER

The form of dualism which we have been discussing, finding a basic separation between the form and the matter of things, or between the world of forms and the world of material existents, has not lost significance in modern times. But emphasis also has been placed upon another fundamental division, which seems not very markedly to have perplexed the ancient philosopher: that, namely, between *mind* and *matter*. Material objects and ideas seem to be distinctly different kinds of beings. Objects occupy definite quantities of space, are hard or soft, colored, and may

possess flavors and odors. Ideas and presumably mind which has to do with ideas (to be distinguished, of course, from *brain*) occupy no space, lack such qualities as hardness and color, and are not subject to such physical laws as gravitation. The position that objects and ideas are fundamentally different has the widespread approval of common sense. Further, this form of dualism has been approved for the support which it seems to give to such beliefs as that in immortality. If the inner *self* or *soul-substance* is different in kind from that of the body, it may well be free from disintegration and corruption at death, as it is free from numerous other laws of the physical world.

On the other hand, having separated mind and body by an impassable gulf, such dualism has found difficulty in accounting for those facts of actual experience which seem to give evidence that the two repeatedly interact and affect one another. For example, how does it happen that bodily injury can produce amnesia or other mental disturbances? Further, if ideas are fundamentally different from objects, how can they represent those objects? That is, how can an idea represent and give us acquaintance—even a *working* acquaintance—with its external object if it is fundamentally unlike that object? Again, if thought is thus separated and of another kind from body, how are we to explain the apparent ability of our minds to exert control over the activities of our own bodies? How, too, are they able to manipulate objects in the external world in such a way as to achieve ends which we *desire*? Common sense and dualistic philosophy may be correct in insisting upon ultimate separation in nature between ideas and physical objects, but these and other questions which present themselves show clearly enough that the conclusion is not to be accepted without further explanation. On our part, it would seem a fair procedure to allow the dualists themselves to speak for their position. Of these, two are preëminent representatives of the dualism of mind and matter: Descartes and Locke.

IV. THE DUALISM OF DESCARTES

No thinker has presented a more wholehearted or a clearer argument for regarding mind and matter as dual substances in the universe than did René Descartes.¹ On many grounds he well may be regarded as the first of modern philosophers, or even as the founder of modern philosophy. Whereas the scholastic philosophers of his day based their thought upon assumptions accepted on the authority of the Church, he determined to accept nothing on faith or authority, but to discover what reason itself could verify. No man can altogether escape from the attitudes and presuppositions of his own age, and Descartes never succeeded in carrying out his purpose rigorously. But his motive and attempt initiated a new approach for philosophical investigation. "I shall proceed," he said, "by setting aside all that in which the least doubt could be supposed to exist, just as if I had discovered that it was absolutely false; and I shall ever follow in this road until I have met with something which is certain, or at least, if I can do nothing else, until I have learned for

¹ Descartes was born March 31, 1596, in Touraine. His family were of the nobility. A delicate boy of exceptional talents, he was sent to the Jesuit College of La Flèche, where he found his primary interest in mathematics. Dissatisfied with the views propounded by his teachers, on leaving La Flèche he sought satisfaction in the social life of Paris. Tiring of this, he sought to withdraw into quiet quarters in Paris, but his friends pursued him. Deciding to travel, he entered military service under Maurice of Orange as a volunteer, paying his own expenses and enjoying in return an unusual degree of freedom from the routine of army life. It was while in winter quarters on the Danube that he first conceived the general lines of his philosophical method (1619-1620), though he postponed its systematic development until he should have gained further age and experience. Leaving the army, he returned to his estates in France, but shortly withdrew to Holland, the land of intellectual freedom at that time, to devote himself undisturbedly to study and writing (1629). Twenty years later, when controversies over his doctrines had made his residence in the Netherlands disagreeable, he accepted the invitation of Queen Christina of Sweden to come to her court that he might explain his philosophy to her. A year of residence in the severe climate of what he called "the land of bears, ice, and rocks" brought on an illness which ended in his death in 1650.

His more important writings include: *Discourse on the Method of Rightly Conducting the Reason and Seeking for Truth in the Sciences* (commonly spoken of as *The Discourse*, or as *The Discourse on Method*), 1637; *Meditations on First Philosophy*, 1640; *The Principles of Philosophy*, 1644; *The World; or Essay on Light* (posthumously printed), 1654; *The Passions of the Soul*, 1650. To these must be added his *Geometry* (1637), in which he founded analytic geometry.

certain that there is nothing in the world which is certain. . . . I suppose, then, that all the things that I see are false; I persuade myself that nothing has ever existed of all that my fallacious memory represents to me. I consider that I possess no senses; I imagine that body, figure, extension, movement and place are but fictions of my mind.”¹ After reaching this position of extreme doubt, Descartes at last finds his desired certainty—he may be deceived or he may be deceiving himself in thinking that there is a world, or that there are other people, or that he has a body, but to be deceived either by another or by himself, he must exist. If he doubt that he is doubting, still he must exist to doubt his doubt. *Cogito, ergo sum.* This statement, *I doubt, therefore I am*, seemed to him so clear and unquestionable that no one could deny it. This “clearness” and “distinctness” become the standard for judging all other ideas. The reason for believing it is not some further argument, but its clarity and the conviction which it immediately stirs in us. Now if we test our other ideas by this standard of clarity and certainty, he argued, we find almost equally indubitable the proposition that causes and effects exist and correspond with one another. The effect can contain no more than was in its cause or causes. Since man exists he must have a cause, and the cause must contain at least all that is in the effect. Now in this effect, *man*, we find a sense of imperfection—he is aware of the fact that he is imperfect. But to know this, he must also know *what it is that he lacks*—he must know *perfection*. To give man this knowledge of perfection, his cause, or Creator, must be perfect. Therefore, argues Descartes, a perfect God must exist. The idea of *God* is clear and innate just as is the idea of *myself*. The word *innate* means, for Descartes, not that the idea was given at the beginning, but that it is one which the mind itself is capable of developing;² one which arises from the very capacity to

¹ *Meditations on First Philosophy*, Med. II.

² “When we say an idea is innate, we do not mean that it is always before us—for in this sense there would be no innate ideas at all—but only that we possess in ourselves the capacity to develop it.”—Descartes, *Reply to the Third Set of Objections*.

think. Having assured himself of God's existence by this and other arguments, Descartes reasoned that, being perfect, it is unthinkable that God should constantly deceive us —hence we may feel confidence in the general validity of our ideas of an external world.

Philosophical and scientific thought, Descartes believed, should proceed after the manner of mathematical. Mathematics assumes certain self-evident or axiomatic truths, and reasons from these; philosophy and natural science should follow the same procedure. It is impossible, ultimately, to prove one's starting point in thought, for to prove any starting point is but to assume some other starting point from which to begin the proof. The beginning must be made from some truth which is *so clear as to be certain*. We have seen that the reality and correspondence of cause and effect seemed to Descartes to be such a self-evident truth. On its basis, he accepts the reality of substance behind the qualities of things,—“It is certain that no thought can exist apart from a thing that thinks; no activity, no accident can be without a substance in which to exist.” If qualities are found to be of two distinct groups, it is obvious, also, that there must be *two substances*. “We do not apprehend the substance itself immediately through itself,” he says, but by means only of the fact that it is the subject of certain activities, it is highly rational, and a requirement forced on us by custom, to give diverse names to those substances that we recognize to be the subjects of clearly diverse activities or accidents, and afterwards to inquire whether those diverse names refer to one and the same or to diverse things. But there are *certain activities*, which we call *corporeal*, e.g., magnitude, figure, motion, and all those that cannot be thought of apart from *extension in space*; and the substance in which they exist is called *body*. It cannot be pretended that the substance that is the subject of figure is different from that which is the subject of spatial motion, etc., since all these activities agree in presupposing *extension* (*i.e.*, the characteristic of occupying space). Further, there are other

activities, which we call *thinking* activities, e.g., understanding, willing, imagining, feeling, etc., which agree in falling under the description of thought, perception, or consciousness. The substance in which they reside we call a *thinking thing* or *the mind*, or any other name we care, provided only we do not confound it with corporeal substance, since thinking activities have no affinity with corporeal activities, and thought, which is the common nature in which the former agree, is totally different from extension, the common term for describing the latter.¹ These two substances are genuinely distinct, as are their qualities (cf. the Sixth *Meditation*).

Having thus separated the two substances of *body* and *mind*, the problem facing Descartes was that of how to explain their apparent interactions. As has been suggested, he frankly admitted that mind never does know the actual substance of objects. Its ideas represent them or, more accurately, their characteristics, with sufficient correspondence to satisfy practical needs. Thus, we may not know the ultimate nature of *bread*, but we do know how to bake it and satisfy hunger by eating it. We may not know the fundamental nature of wheat or understand fully the inner process of its growth, but we may learn to plant, till, and harvest it. To the question of how mind can know so much as the *qualities* of things fundamentally unlike itself, he gives no satisfactory answer. To be known, it would seem that the qualities of things must be like ideas, but to be qualities of objects and to belong to them is to be of a material order asserted to be altogether unlike ideas. If a quality is *in the mind*, on the basis of Descartes' thought, it must be an idea, and how can an idea be a quality of what is fundamentally and completely unlike ideas? On the other hand, if a quality, e.g., extension, is *in the object*, by nature it must be unlike ideas. How, then, can an idea represent it? Can an idea present even the practical aspects of anything, the nature and activities of which are totally unlike its own?

¹ From Descartes' *Reply to Hobbes, Third Set of Objections*.

In the field of psychology, Descartes achieved an account of the interrelations of mind and body by virtually giving up their substantial difference. Mind exists in a body, and dwells there in a particular place—the *pineal gland*. By pushing the gland in this way and that with varying pressures, it is able to set *animal spirits* in motion. Moving in directions and to distances determined by these “pushes” from the mind or *soul*, the animal spirits pervade the body, and direct its movements, thus carrying out the will of the soul. Such an explanation gives to the soul the characteristics of a *material* entity, existing in a certain *place* in space (*i.e.*, the pineal gland), and employing the *mechanism* of “pushes” to accomplish its desires. The *animal spirits* are sufficiently akin to soul to be moved by it, and yet close enough in nature to body to affect movements in it. If soul and body were really of completely unlike substance, obviously there could be no such intermediary things which were sufficiently like both to bring them together.¹ Certain of Descartes’ followers recognized this difficulty, and turned to occasionalism for its solution. Thus, such Cartesians as Régis, Cordemoy, and especially Geulincx flatly denied psychological interaction between mind and body. When events in our minds seem to be caused by changes in our bodies, or bodily changes seem to be caused by mental, the causal connection is only an illusion. God, so they taught, is the real cause of all changes both mental and physical. The changes which seem to us to be causes are in fact only signals or occasions. This position, however, not only assumes the existence of God, but also the far more dubious idea that He does intervene and act in this way. Whatever one may think as to the first belief, certainly the second assumption cannot be verified.

The difficulty of explaining the interaction of two distinct substances may have been met in a highly unsatisfactory

¹ Descartes’ friend, the brilliant Princess Elizabeth, said that it is easier to think of the soul as material than to understand how, without being material, it is able thus to move matter.

manner by Descartes, but the failure of a single philosopher, living three hundred years ago, need not be taken to mean that the problem is insoluble. However, our reason for considering his system in some detail has not been mere historical interest, but the fact that in it are revealed with especial clarity the difficulties which have proven to be inherent in the dualistic position itself. They are difficulties which persist whenever dualism receives a new formulation. As a *theory of knowledge*, dualism continues to hold a position of importance in our own day, and to number among its adherents men of the highest scholarly distinction.¹ In this connection, we shall have occasion later to return to it. But when more recent philosophers have attempted to develop dualistic *theories of substance*, the old difficulties have reappeared and proven as insurmountable as for Descartes. There remains, of course, one escape—an appeal beyond reason to religious authority and faith. By reliance on this, scholastic philosophy has retained a generally dualistic attitude with regard to soul and body. Even here, however, the dualism is not ultimate, but, as for Descartes, thought and matter alike go back to and are governed by a single Divine Cause.² Outside of scholastic philosophy, metaphysical dualism (*i.e.*, dualism of substance) receives support in the writings of certain recent and contemporary psychologists, particularly those of Wilhelm Wundt and William McDougall.

¹ For example, the Critical Realists, among whom were C. A. Strong, George Santayana, A. O. Lovejoy, Durant Drake, A. K. Rogers, and J. B. Pratt.

Cf. especially A. O. Lovejoy, *The Revolt against Dualism*.

² Because of this, it would be possible to classify Descartes as a monist, but in view of his treatment of mind and bodies, his customary classification as a dualist is more useful.

Medieval philosophy divided all things into two classes: the *possible* and the *necessary*. The second class contained God; the first ordinarily contained four or five members, generally spoken of as substances: matter, form, concrete object, soul, and separate Intelligences. Like Augustine, Descartes regarded God as substance, but "unlike any other substance." The more usual medieval position held that God cannot be placed under any general classification with other things, hence He may not be regarded as a substance.

For an excellent discussion of the medieval conception of the relation of substance and accident, cf. H. A. Wolfson, *The Philosophy of Spinoza*, Vol. I, pp. 67 ff. Published by the Harvard University Press, 1934.

V. THE DUALISM OF LOCKE

An advance in the statement of the dualistic position, and at the same time a significant retrenchment from the more rigorous expression which it received from Descartes, is found in the writings of the British philosopher, *John Locke*.¹ To the works of Descartes he attributed his own "philosophical awakening," after what he had found to be a barren study of scholastic philosophy at Oxford.

Among the first of modern philosophers to attempt a vigorous study of the problems of human knowledge, Locke's approach to *substance* was by way of an analysis of *ideas*. Do our ideas, gained through experience of things, reveal to us the nature of substance directly? The reply is, of course, that they do not. Substance is something which we do not know through experience, but that we infer as a necessary basis for the qualities which we do experience in things. "The mind being . . . furnished with a great number of the simple ideas, conveyed in by the senses, as they are found in exterior things, or by reflection on its own operations," says Locke, "takes notice also, that a certain

¹ John Locke was born near Bristol, on April 29, 1632. His early education was supervised by his father, an attorney. Later he attended Westminster School for six years, and in 1652 went to Oxford. After giving up his earlier intention of entering the Church, he began the study of medicine. This led to his acquaintance with the famous chemist, Robert Boyle, and with Sydenham—a lasting influence in his life. After completing his preparation, he entered the service of the Earl of Shaftesbury, where he became "friend, secretary, doctor, and tutor of two generations." Having entered actively into political life, he found it advisable to leave England on the downfall of Shaftesbury, and spent several years traveling, chiefly in France and Holland. He became intimately acquainted with the Prince of Orange, and on his rise to power Locke returned to England in 1689. Under William, he occupied a position of influence and filled several important public offices. After some years of illness, he died near London in 1704. Devoted to the cause of freedom, Locke was a man of lovable nature, and intense loyalty to truth. Characteristic of his attitude are his words, written the year before his death: "To love truth for truth's sake is the principal part of human perfection in this world, and the seed-plot of all other virtues."

His chief writings were: *An Essay concerning Human Understanding*, published in 1690; *Some Thoughts on Education*, 1693; *The Reasonableness of Christianity*, 1695; *The Conduct of the Understanding*, published posthumously. In addition to these were his famous *Letters on Toleration*, 1685, and his *Two Treatises on Government*, 1690. Also there were numerous tracts and shorter works on religious and political subjects.

number of these simple ideas go constantly together; which, being presumed to belong to one thing, . . . are called, so united in one subject, by one name. . . . Not imagining how these simple ideas can subsist by themselves, we accustom ourselves to suppose some substratum wherein they do subsist, and from which they do result; which therefore we call substance. So that if any one will examine himself concerning his notion of pure substance in general, he will find he has no other idea of it at all, but only a supposition of he knows not what support of such qualities.”¹ Similarly, from such activities as “thinking, reasoning, fearing, etc.” which seem unable to subsist by themselves, we infer a spiritual substance which carries on these activities.

For Locke, however, the inference is a justifiable one. The difficulties which men have met in dealing with substance have usually arisen from their failure properly to analyze the ideas of their own experience. Because of this failure, they have confused the real nature of things which their ideas reveal with elements added by their ways of perceiving and thinking. Our ideas of qualities are of three kinds: those of *primary qualities*; of *secondary qualities*, and of *tertiary qualities*. Primary qualities are those which actually exist in things-themselves. They include “bulk, figure, number, situation, and motion of the parts of bodies.” These our senses discover directly and reveal to us. Secondary qualities are not in things, but are the resultant reactions of our senses when we experience the thing; they “are nothing but the powers those substances have to produce several ideas in us by our senses.” Such are the qualities of color, flavor, warmth or coldness, and sound. Tertiary qualities are those which have to do with the relations of one body to another—e.g., the power of a magnet to affect iron. It thus appears that, for Locke, through our ideas of primary qualities, we may learn certain things directly about things-themselves. Despite this, substance itself is unknowable. It is no more than a *something* which holds

¹ Locke, *Essay concerning Human Understanding*, Book II, Chapter 23.

together the various properties of things. It must be assumed, for we cannot think of things in any other way.¹ The same is true of spirit or thinking substance, as of physical objects, or extended substance. As thinking substances, we know *that* we must exist, but we cannot know *what* we are.

In thus asserting the existence of substance as a presupposition of all thinking about things and ourselves, but recognizing that we can know nothing whatsoever about *what* this substance is, Locke prepared the way for the downfall of the doctrine. Of what value, its critics asked, is the assumption of something about which we can know nothing? What can such an *unknowable* really explain? If things exist for us as complexes of various qualities, then it is these complexes and these qualities which must be explained. To assume that they are to be explained by a *substratum* about which we know nothing is no better than to give up the problem of explanation altogether. Is it not a wiser course to take things as we can and do experience them, and to seek an account of these, rather than misguide ourselves by introducing the myth of an unknowable, supposing that in it we have found a final solution of our difficulties? If our idea of a thing is simply an idea of the qualities and powers which we think of as belonging to it, why may it not be as well to recognize the fact frankly, and say that the thing *is* these qualities and powers, and so far as we can know, it is nothing more?²

¹ Despite this belief in the unknowability of substance, Locke does not hesitate to differentiate substance as "cogitative and incogitative." *Essay*, II, 23.

² For literature having to do with the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER VI

PANTHEISM

I. PANTHEISM AS A PHILOSOPHY

The term "Pantheism" is not an altogether happy one for the designation of a strictly philosophical position, because of its strongly religious connotation. Yet of necessity the two connotations meet here, for the essence of the view is found in its insistence upon a single creative Being, or God, which constitutes all things—they are expressions or limited forms which It takes for a greater or less period of time. As might be expected, the position has reached its fullest development in the East, where religion and philosophy are largely fused by the Oriental mind. Perhaps the earliest form of pantheism was that which existed in Egypt. Our first knowledge of Egyptian religion shows the presence of a great number of gods, originally patterned after the animals, but in many cases gradually transformed into beings akin to men. At Heliopolis in the days of the Middle Kingdom (about 2000 to 1790 B.C.) the priests constructed a theology in which their sun-god *Re* was given supremacy. Due to the power of the city and its priests, this theology came to extend over a wide area, until officially *Re* was recognized as the first god of the entire country. Other gods were related to *Re* by their priests, and an elaborate theological structure resulted. Finally, to explain the origin and position of the various deities, a systematic order was constructed with *Re* pre-eminent. Gradually all others became manifestations of him, as all things, indeed, became forms of his being. This idea was easily pictured. *Re* was the sun-god, and all beings derive their life and nourishment through the agency of the sun.

In India, a far more profound development occurred, due chiefly to the thought of a number of men who, disgusted

with the superstitious rites of the popular religion, retired to the forest to meditate on the real meaning of life. The results of their thinking are to be found in the *Upanishads*, which embody the fundamental principles of Hindu philosophy and religion. Essentially, their teaching may be summarized in the statement that there are not many, but ultimately there is but one Being in the entire universe. This Being is the universe, and all that it contains are but manifestations of It. "The souls of men are 'sparks from the central fire, drops from the ocean of divinity.'" "My (real) self," they said, "is the Infinite Self." Being one with the ALL, or with universal Being, the finite life which regards itself as individual is evil in so far as it ignorantly supposes itself to be something separate. Salvation must be achieved by freeing oneself from the limitations which separate one from the ALL—by a sudden intuition, a flash of true insight, man may hope to penetrate the artificial partitions which separate him as a finite being from the Universal Being, of which he is but a form or particular manifestation. Since this Universal Being includes all things and all forms of being, it is in but cannot be said specifically to be any one of them. To call the ALL good, or personal, or understanding would be to limit that which is beyond all qualities. Sankara, who lived about 800 A.D., developed this monistic teaching into the rigorous lines of the Vedanta system. For him, nothing is real but Brahma; the physical world and all that it contains, as separate entities, are but illusion.

Though seldom accepted as wholeheartedly as in the East, pantheism by no means has lacked expression and influence in the Western World. Christian theology has attempted to hold firm to the doctrine that God is both within and above the world. But in the development of thought and doctrine, it has not proven easy to maintain this balance of emphasis on *immanence* in (or indwelling) and *transcendence* of (or existence in a mode above and beyond) the world. If God's immanence was emphasized, the result was a pantheistic tendency in thought; if His transcendence, a deistic

Cause and explanation meant for him the same. To explain anything is to show its place in the universal order; it is to show why it does and necessarily must exist as the kind of thing it is. Nothing comes by chance, and could we but free ourselves from our limitations of thought, could we but view all things great and small "under the form of eternity," or as they would appear were they regarded in their relationships to the whole of things, we should discover their true nature. We should see why they are and why they must be as they are. With this vision before his inner sight, Spinoza turns to develop his theory in terms of argument majestic in its compass, which, once entered, sweeps on with dramatic power to its conclusion. One, among numerous aspects of its course, namely, his treatment of substance, we may follow briefly.

II. SPINOZA

"I understand *substance* to be that which is in itself and is conceived through itself," he says.¹ "I mean that, the conception of which does not depend on the conception of another thing from which it must be formed." In other words, substance is something which is neither a property of something else nor a result of anything beyond itself. To be so would render it dependent; substance is that which is completely *independent*, and could exist irrespective of whether anything else exists or ever had existed. As the *Cause of Itself* (*causa sui*), its existence arises not from something outside of itself, but from a necessity in its own

¹ Baruch (Benedict de) Spinoza was born November 24, 1632, in Amsterdam, where his father, a wealthy Jewish merchant, had taken refuge from the Inquisition in Portugal. A brilliant boy, his independent reading and thinking led him to differ with his teachers in the local Jewish academy, and finally brought excommunication from the synagogue. By the trade of grinding lenses, he supported himself at Rhiensburg and later at The Hague. Possessing a profound love of truth, simplicity, and unselfishness, he was deeply loved by his friends but suspected always by many as a foe of orthodoxy. By some he has been called an atheist—by others, the god-intoxicated man! Spinoza died in 1677 at The Hague.

His writings, most of which were published only after his death, include: *Ethics*, his greatest work; *Tractatus Politicus*; *Treatise on the Correction of the Understanding*; and certain *Letters*—all published in 1677.

nature. "Everything which is, either is in itself or in another" (*Ethics*, Axiom I). Properties are in other things and depend upon them for existence, but substance is complete in itself.¹ We cannot think of the original or ultimate cause of the world as having something else for *its* cause. If A causes B, and B causes C, then A, rather than B, would be the original or ultimate cause of C. Either we must say, then, that the world had no original and ultimate cause, or else we must agree that this cause was itself uncaused. Spinoza accepted the second of these alternatives. Since the world does exist, it must have had a cause, he reasoned. This cause may itself have had a further cause—indeed, the series of causes and effects may be carried as far back as one pleases, but for the series ever to have gotten started requires an original something which was the independent *Cause of Itself*. As the eternal basis of all existents, this self-caused element may be termed *substance*, and as the creator of all that is, it may be known as *God*.

What is the nature of this original substance? To such an inquiry Spinoza replies quite simply: we do not and we cannot know. We believe in substance because reason tells us that if it were not real, the world could not exist. Furthermore, we may have a clear and distinct idea of its existence. But its nature is *indefinable*. To define anything is to explain specifically *what* it is—but to do this is to imply that it *is not* certain other things. To say that a book is red is to imply that it is not equally all other colors. Were it all colors, it could not be defined as any one of them. It is because a ray of light contains all colors that it is colorless. Now the original substance must be the cause of all that is—and therefore, of all that we experience or know. It must contain in itself all that it reveals in that which comes from

¹ This statement recalls Aristotle's statement: "Some things can exist apart and some cannot, and it is the former that are substances." *Metaphysics*, XII.

Similar statements recur frequently in the writings of mediæval philosophers. For examples, and for an excellent discussion of new elements which Spinoza introduced into the conception of *substance* and *accident*, cf. H. A. Wolfson, *The Philosophy of Spinoza*, Vol. I, Chapter III.

it. Therefore, it may not be said to be more like one thing in our experience than another. To define substance as *matter* or as *mind* would be to imply that it was not anything else, hence it would be to limit it. But since substance must be the cause of all things, it cannot be so limited in its nature as to be like any part of them and unlike others. To be limited, anything must be limited by something alien to it which can curb and restrict it. There being but one original and independent substance, it cannot be so restricted and, therefore, it is not limited in any way. From which it must be seen that its forms of expression may be infinite, and that its nature cannot be limited and said to be like some small part which we experience.¹ Spinoza's early education under rabbinical teachers had firmly fixed in his mind the idea that there can be but one God. In the *Ethics* he defends this view: Two substances having different attributes could have nothing in common between them. Hence they could not be related in the organization of a single world order (Proposition II). On the other hand, if two substances existed, they would be differentiated only by their attributes. Hence they could not have the same attributes and remain different substances (Propositions IV-V). His conclusion is that, "Except God, no substance can be granted or conceived" (Proposition XIV).

If God is the only substance, it must follow that all things whatsoever and we ourselves are limited manifestations of God. In our familiar experience, we are acquainted with two ways in which we seem to be *causes* of things which occur. One of these is exemplified in the carpenter, who takes certain material and constructs a house. The house is quite apart from himself, as something which he makes. The other is seen in the boy who through persistent effort causes a musician by *becoming* one. Spinoza's conception of creation is closer akin to the second than to the first way of *causing* things. God caused or created the world by

¹ This conception of God as knowable in His existence, but not in His *essence* was a familiar one in mediæval philosophy.

becoming the world, Himself taking the manifold forms which we call *things* and *people*. Thus, in their basic substance, all things are God. Yet God is not only in the world, but also He transcends it.¹ For of infinite *attributes*, only two are expressed in the world as we know it. These are *Thought* and *Extension* (or bodies). Just how far these attributes are simply *our ways of viewing God*, and how far they are *discoveries on our part of something in the nature of God*, is a point on which scholars differ. Spinoza's definition may be made to support either view, depending on where emphasis is placed in it: "By attribute, I understand that which the intellect perceives of substance, as if constituting its essence" (*Ethics*, I, Def. iv). Beyond the two known attributes of God are *modes* in which these attributes are expressed in our world. Bodies, with their forms and motions, are modes of extension, while minds, with their volitions and ideas, are modes of thought. The word *mode*, rather than *accident* or some more common term of his day, seems to have been adopted by Spinoza in order to emphasize his thought that the particular object or idea can be understood only in terms of the substance which is expressed through it. "By mode," he says, "I understand the Modifications of a substance or that which is in something else through which it may be conceived" (*Ethics*, I, Def. v).

All things may be regarded in either of two ways: (1) in their relations to one another and to human interests and desires, that is, as a *sum-total* of individual things; (2) in their relations as all being modal expressions of one God. The first is the view of ordinary thought and of natural science; the second, that of reason and intuition. The first view may be relatively true, but it considers only the surface aspect of things, while the second is the more profound, "It is the nature of reason to perceive things under a certain form of eternity (*sub quadam æternitatis specie*)."

¹ The use of the personal pronoun is scarcely justifiable on other grounds than convenience, for God (substance) transcends personality, as all other characteristics of ours, and is thought of impersonally.

III. CONTEMPORARY "NEUTRAL MONISM"

From even so brief a summary of Spinoza's conception of substance, justification may be seen for regarding his philosophy as anticipating the modern position of *neutral monism*. This is a view advocated by Bertrand Russell and numerous others and described by him as "neither materialism nor mentalism, but what we call 'neutral monism.' It is monism in the sense that it regards the world as composed of only one *kind* of stuff, namely events, but it is pluralism in the sense that it admits the existence of a great multiplicity of events." The unity of the world is due to the single source from which all things arise. The world of extended material objects cannot be reduced to ideas or any kind of *mental* objects. On the other hand, minds and their activities cannot be accounted for as effects of matter and mechanical motions. Both mind and matter must be accepted as genuine, but not as ultimately separate. Their unity is recognized, not in that one is a form of the other, but in that both are forms of some prior reality, whose nature cannot be defined fully in terms of either. Thus the advantages of dualism are saved for common sense, without its hopeless dilemma of accounting for interrelations between different substances. Likewise, the principal values of both materialism and spiritualism are conserved, without the difficulties which arise from their claims to exclusive reality for their particular substance. Freed from the trappings of mediæval terminology, Spinoza's argument is for a recognition: (1) that ultimate substance is indefinable; (2) that mind and matter are diverse and mutually independent aspects of this substance; (3) that all particular things, whether physical objects, minds, or ideas, are but modifications of substance—forms which it takes. With the first proposition, modern neutral monism is in complete agreement. If it disagreed with the second, it would be primarily to point out that two aspects of the same substance need not be regarded as so completely diverse and independent

of one another as in Spinoza's system. In the case of the third, it would emphasize the fact that since these modal expressions are all of the same substance, it follows that they (and they includes everything in our world) differ from one another only in *structure*. Since ultimate substance is unknowable, all efforts at explanation, whether scientific or philosophical, will have to do with the structure of things.

However, the closeness of relationship between Spinoza and contemporary scientific philosophy must not be pressed too far. Versed in mediæval thought, his arguments constantly reflect the influence of its assumptions. To most thinkers of the present day, it would seem that he depended too largely upon rationalization and went too far in his effort to employ the methods of geometry in dealing with philosophical problems. There would seem to be too little attention to experience and too much emphasis upon the truth of "clear and distinct ideas." A more specific difference which is of interest for our discussion is that as to the number of attributes. For Spinoza, we have seen that only two attributes may be known, *thought* and *extension*. The scientist and philosopher are now inclined, not only to make a less rigorous and complete differentiation between these two, but also to place no definite limit on the number of attributes. Energy, space, and time are the most commonly accepted and discussed. The concept *energy* is more satisfactory than extension or matter, because it is sufficiently broad to cover psychological as well as physical processes.¹

IV. MODERN PANTHEISM

Since the time of Spinoza, pantheism has received philosophic expression from numerous writers. Schopenhauer,

¹ This substitution is well described by Professor Boodin: "The conception of energy has gradually supplanted the conception of matter as a universal ideal of description. Matter is applicable only within a limited field. It is not applicable, for example, to electricity; while energy with its equivalences of transformation can be made to cover the whole extent of process, material and immaterial, physical and psychological."—J. E. Boodin, *A Realistic Universe*, p. 389 (second edition). Published by The Macmillan Company, New York, 1916, 1931.

with his doctrine of universal will, seeking forms of realization in all the activities which the world displays, was distinctly voicing this doctrine. Order in nature reveals a purpose—not the purpose of a conscious designing Divine Mind, but the dumb, unconscious, groping purpose of "the will to live." Similarities in nature, the coördination of functioning, the care of parent for unborn offspring—all of these reveal a unity of world-will, which recognizes neither ultimate divisions of individuals from one another, nor the separation of present and future. One and others, today and tomorrow, are viewed as one unity—through all the will gropes its way forward to fuller life and expression. Again with the philosophers of romanticism, particularly in Germany, the unity of nature and man, and the pervading presence of God as the Spirit of All, is the constantly recurring theme. In our own day, Bergson's doctrine of the all-pervading, all-vitalizing energy (*élan vital*) is a notable expression of the same attitude. Not in Bergson alone, however, but in varying degrees throughout a considerable part of contemporary thought, pantheistic tendencies, if not a thoroughgoing pantheism, are evident.

However, it is not in the reasoned arguments of philosophers, but in the more dramatic and enwholing conceptions of mysticism and of literature that pantheism has always received its most suggestive interpretations. A familiar example is Emerson's essay on "The Over-Soul," where he writes: "The Supreme Critic on all the errors of the past and the present, and the only prophet of that which must be, is that great nature in which we rest as the earth lies in the soft arms of the atmosphere; that Unity, that Over-Soul, within which every man's particular being is contained and made one with all other. . . . We live in succession, in division, in parts, in particles. Meantime within man is the soul of the whole; the wise silence; the universal beauty, to which every part and particle is equally related; the eternal one." If we look to poetry, the examples which might be chosen are quite beyond counting.

Somewhat at random, we recall the lines of Swinburne's *Hertha*:

Before ever the land was,
Before ever the sea,
Or soft hair of the grass
Or fair limbs of the tree,
Or the flesh-coloured fruit of my branches, I was, and
thy soul was in me.

• • • •

Beside or above me
Naught is there to go;
Love or unlove me
Unknow me or know,
I am that which unloves me and loves; I am stricken,
and I am the blow.

• • • •

I am the grain and the furrow,
The plough-cloven clod
And the ploughshare drawn through,
The germ and the sod,
The deed and the doer, the seed and the sower, the dust
which is God.

• • • •

All forms of all faces,
All works of all hands
In unsearchable places
Of time-stricken lands,
All death and all life, and all reigns and all ruins, drop
through me as sands.

There is a majestic quality in such a pantheistic conception to which no man of imagination can be altogether cold. Standing beside the blue waters of some glacier-fed lake and viewing the white heights of surrounding mountain peaks, or looking across the vastness of an ocean on which no ship is visible, or sailing idly between the intense green foliage of a tropical river's banks with only the ripple of one's boat to break a breathless silence that seems everywhere alive—who, in such an experience has not felt that the universe is one, and that his life, too, is but a momentary pulsation in the eternal existence of that Being which is the All of Reality? Who, too, in less poetic moments, has not felt the intellectual longing for an account of things which would,

show the place of every fragment and detail of life within the order of an all-inclusive and a perfectly unified and harmonized pattern? It is this completeness, this harmonious unification which pantheism offers, and it is this which constitutes its fundamental appeal. Living amidst the incompleteness of human experiences, with their torn and unfinished edges—everywhere finding that unity and peace lie beyond their grasp, men find intellectual consolation and profound satisfaction in the sense that ultimately all these fragmentary efforts, these unrealized hopes, these unfinished thoughts, are joined in the completing unity of an infinite whole, which incorporates them in an eternal and perfect order.

The strength of pantheism thus lies in its logical harmony and completeness as a metaphysical system, and in its reverence-inspiring majesty as a religious faith. Its weakness, as pointed out by its critics, would seem to be found in its minimizing of the importance of the individual and in its failure to account adequately for the presence of evil and suffering in the world. Its picture of a world where all is an expression of the eternal being of God is a beautiful picture, but is it a true one? Is the world, in fact, a unified thing? Is there, beneath all the stress and struggle of human living, this infinite harmony and peace? If so, why does such an eternal and perfectly harmonious Being manifest itself in all the forms of evil and cruelty which experience reveals to us?

Furthermore, if all men are but manifestations of God, and if *all* actions are ultimately God's actions in and through us who are His manifestations, how shall we find a basis for moral distinctions, or justify our inescapable sense that some people are morally better than other people, or any way of conduct is better than any other way, or any idea truer than any other idea? Shall we suppose that God can sometimes be cruel, sometimes envious and malicious, sometimes in error? The pantheist, of course, replies to such criticisms by pointing out that it is not what we are, but what we are not, which is accountable for these things. We are manifesta-

tions of God, but we are limited manifestations. It is not God in us, but our finite limitations which cause our difficulties. In the case of truth and error, this reply would seem most satisfactory, for error of thought is to be explained in no better way than as due to limitations of experience or intellectual capacity. With all experience at our command and no limitations of our capacity to think clearly and accurately, doubtless we should make no mistakes. It is somewhat more difficult to feel that the explanation is as satisfactory when applied to such things as innocent suffering—for example, from an incurable disease. These things may be due, too, to limitation in some form, but why should a divine being, whose nature was that of complete harmony, be susceptible to limitation and division into fragments on which the cancerous growths of our various physical, economic, political, and other evils might flourish.

The criticism may be judged sound or invalid, but however severely pantheism may be accused of failure to justify our moral distinctions, or to place due significance on human individuality, it scarcely may be disputed that from the point of view of metaphysics, its logic possesses a strangely compelling force, and from that of religion, its feeling of grandeur in the Universal One presents an equally compelling sublimity. To feel this inner power, one need but turn to any of its many poetic expressions—for example, to such lines as the following from Alfred Noyes' *The Loom of Years*:

O, woven in one wide Loom thro' the throbbing west of the whole
One in spirit and flesh, one in body and soul,

One with the flower of a day, one with the withered moon,
One with the granite mountains that melt into the noon,
One with the dream that triumphs beyond the light of the spheres,
We come from the Loom of the Weaver that weaves the Web of Years.

Or to Emerson's *Brahma*, depicting the eternal *One*:

If the red slayer think he slays,
Or if the slain think he is slain,
They know not well the subtle ways
I keep, and pass, and turn again.

Far or forgot to me is near;
Shadow and sunlight are the same.
The vanquish'd gods to me appear;
And one to me are shame and fame.

They reckon ill who leave me out;
When me they fly, I am the wings;
I am the doubter and the doubt
And I the hymn the Brahmin sings.¹

¹ For literature having to do with the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER VII

SPIRITUAL SUBSTANCE

I. THE BANISHMENT OF MATTER

While *materialism* holds that all things are but forms and activities of an underlying material substance, *dualism*, as we have seen, insists that, in addition to a material, there is a *spiritual* substance, or mind. Thus dualism does not deny the reality of matter, but rather, its exclusive right to be regarded as the *only* substance. *Spiritualism*, on the other hand, is satisfied with no such half-hearted antagonism. Placing itself in direct opposition to materialism, spiritualism maintains that matter has no genuine and ultimate reality at all. It is a fiction, an appearance, an idea shaped by the mind—and it is nothing more. Only minds or spirits actually exist as real substances. But these spirits are active—in particular, among their activities is that of *perception*. By activities of perception, they are able to experience colors, sounds, and the other sensations. They may suppose that they are observing qualities *in* material objects, but it is not so, says the spiritualist. There is no reason to believe that there are any material objects, and if there were, we could know nothing of them.

For a philosophy to maintain that no material world exists, but that all of the seemingly material objects—all the “choir of heaven and the furniture of the earth”—are really only ideas or perceptions in minds, would seem to be departing very far indeed from common sense and every-day experience. Yet, it is precisely on the basis of the argument that this actually is what ordinary experience shows, that the position has been maintained. Such a view of the world is contrary to accustomed habits of thought; it is not the usual belief of the man of practical action. But a little reflection

also makes the surprising disclosure that it is not out of harmony with any experience of the world that we have ever had. If I walk by the shore, it is to view the colors of sky and sea, to feel the movement of damp sand underfoot, to enjoy the tang of salt air, and to hear the roar of breakers. But the blue sky, the floating cloud, the sea-gull wheeling overhead—for me these are *ideas*. I gain them through a sense of sight, which, in unreflective hours, I assume resembles a window transmitting direct images of outside objects to my mind. Yet I know well enough that in fact my eyes give to me only activities of their own, set going by some energy which I assume to be a light wave outside. It is no less so with the touch of the sand, or the sound of the breakers against the cliff. I know, too, that my mind puts together and interprets a variety of sensations in the forms of the *objects* which I believe I am perceiving. Sights, sounds, tastes, odors, feelings—are these in things around me? Perhaps so—but as *I experience them*, they are activities within my own organism. Is there any certainty that they may not be there alone and not at all in independent objects? Is there any certainty that there are independent objects? At least their reality cannot be *proved* by our senses. The position that the world which we experience and know is a world of ideas which depend for their existence on perceiving minds, is known in philosophy as *mentalism*.

We possess direct and certain knowledge of one thing, urges the mentalist—our *experience*. We feel it as a present certainty. If I have the experience of seeing a lake, it is possible that the lake exists only as a mirage, or it may be a dream, or it may have physical existence in the external world. If the lake disappears as I draw closer, I shall probably decide that it was a mirage, particularly if it was seen in the desert under conditions rendering a mirage probable. If shortly after seeing the lake I find myself answering the waking call of the telephone bell in a city hotel, the conclusion will be that the lake was a dream. But if the idea of the lake persists, and behaves consistently as I believe lakes

should, allowing me to sail out on it, or to swim by its banks, I accept it as a genuine object in the physical world. It will be noted, however, that the judgment that it is a mirage, or a dream, or a "real" lake, is based upon inference—primarily inference from the *consistency* of its behavior. The only certainty is that of the experience itself, which I *have* directly and unquestionably, no matter whether it arises from mirage, dream, or physical object. "The first thing to realize," says Bertrand Russell, "is that there are no such things as 'illusions of sense.' Objects of sense, even when they occur in dreams, are the most indubitably real objects known to us. What, then, makes us call them unreal in dreams? Merely the unusual nature of their connection with other objects of sense. I dream that I am in America, but I wake up and find myself in England without any intervening days on the Atlantic which, alas! are inseparably connected with a 'real' visit to America. Objects of sense are called 'real' when they have the kind of connection with other objects of sense which experience has led us to regard as normal; when they fail in this they are called 'illusions.' But what is illusory is only the inferences to which they give rise; in themselves, they are every bit as real as the objects of waking life."¹ Yet, though our immediate and direct knowledge may be of experience alone, we commonly feel that a considerable portion of this experience has to do with *objects*, which do not exist only in our thoughts but also as material or physical things, quite independent of us, in the external world. We feel that they would remain *there*, whether anyone perceived them or not. Indeed, is it not because they are *there*, quite independently of any mind, that numerous minds can discover and experience them?

II. A WORLD OF MINDS AND OF IDEAS: BERKELEY

Opposing this ordinary view, but opposing it by an appeal to experience, stands *George Berkeley*,² the classical exponent

¹ Bertrand Russell, *Our Knowledge of the External World*, p. 90. Published by W. W. Norton and Company, New York, 1929.

² George Berkeley was born March 12, 1685, in Kilkenny, Ireland. His family had come to Ireland from England immediately following the Restoration, and was

of the position that no substance exists in the world except that of perceiving *minds* or *spirits*. Berkeley's argument proceeds with extraordinary simplicity and clearness and its main lines may be stated quite briefly.

By a *spirit*, Berkeley means a conscious being—above all, a being which *perceives*. Primarily, then, a spirit must be *active*. *Ideas*, on the other hand, are passive. They are in the mind, and are dependent upon it. The term "idea" is employed in his writings rather broadly and sometimes vaguely, to include sense-data, such as colors and sounds, as well as constructions of reason, memory, emotion, and imagination. *Matter*, he defines as that which is altogether different from and independent of thought and spirit. When simple ideas frequently appear in groups, we come to think of the group as a *thing*. "Thus, for example, a certain colour, taste, smell, figure, and consistence having been observed to go together, are accounted one distinct thing, signified by the name *apple*; other collections of ideas constitute a *stone*,

a collateral branch of the noble family of Berkeley in England. Höffding recounts the story of Swift's introducing young George to the Earl of Berkeley with the words: "My lord, here is a young man of your family. I can assure your lordship that it is a much greater honour to you to be related to him than to him to be related to you." Whether the story be true or legendary, at least it is certain that Berkeley early displayed extraordinary brilliance, and conceived the basic principles of his philosophy in early youth. His most significant writing was done when he was between the ages of twenty-four and twenty-eight. After studying at Dublin, where the writings of Newton, Boyle, and Locke had gained primary attention, Berkeley entered the Church. After a few years in London, where he was an accepted member of leading literary and social circles, he returned to Ireland. But dissatisfied with the life of the churchman in Europe, he determined to push into a new land, assisting as far as he might be able in "transplanting the Arts and Sciences to America." There a new start for civilization might be made. His application to the king for a grant and funds to start a college in Bermuda for the training of missionaries to the Indians was granted. He sailed to the land of promise with the charter for his college, but the promised funds were not forwarded. After waiting for three years in America (most of which time was spent in Rhode Island), he was obliged to return in disappointment to Europe. Becoming Bishop of Cloyne in southern Ireland, he devoted himself zealously to his ecclesiastical duties and to the discussion of public questions. His last years were spent at Oxford, where he died in 1753.

Among his more important writings were: *New Theory of Vision*, 1709; *Principles of Knowledge*, 1710; *Dialogues between Hylas and Philonous*, 1713; *Alciphron*, 1732. His breadth of interest is shown in the fact that his latest writing was a scientific treatise on earthquakes!

a tree, a book, and the like sensible things; which as they are pleasing or disagreeable excite the passions of love, hatred, joy, grief, and so forth.”¹ The fact that objects *as we know them* are constructed in this way does not prove, of course, that the ideas in the mind may not be *copies* of things-themselves outside which are material, or at least *unthinking substances*. To this possibility, Berkeley replies: “An idea can be *like* nothing but an idea; a colour or figure can be *like* nothing but another colour or figure.” “Again, I ask whether those supposed *originals*, or external things, of which our ideas are the pictures or representations, be themselves perceptible or no? If they are, then *they* are ideas (for the mind can know only ideas), and we have gained our point: but if you say they are not, I appeal to any one whether it be sense to assert a colour is like something which is invisible; hard or soft, like something which is intangible; and so of the rest.”² It would be as meaningless to speak of any idea as representing or being *an idea of* something totally unlike it, as to say that a certain portrait was *of* Queen Victoria, if the figure it presented were totally unlike Her Majesty. Since the mind can deal only with ideas, and ideas can represent only that which is like themselves, does it not follow that the mind can deal with and understand only those things which are like ideas? If matter really existed, we could never know of it, for being fundamentally different from ideas, no idea could represent it. When anyone asserts that matter exists, presumably he *means* something by *matter*—it is something which he has *thought* about. In fact, however, he cannot think about matter itself, but only about the idea which he has of it. Hence to think about matter is to think about an idea—but a paradoxical one, which has attached to it the further idea that it is not an idea!

In denying the existence of *matter*, Berkeley believes that he has in no way affected our every-day experience of physi-

¹ *Principles of Human Knowledge*, Part I, 1.

² *Principles of Human Knowledge*, Part I, 8.

cal things. For that experience consists solely of receiving various sensations (or, in his sense of the word, *ideas*). No one supposes that these sensations themselves are matter, but matter is merely assumed to exist and *cause* them. Why not take what experience gives us, without making any such assumption about its cause? Why not believe the world is what we can and do discover it to be, rather than build myths about substances which we never encounter in it? Moreover, this particular myth about matter is an extraordinarily preposterous one, asking us to believe, as it does, that we never perceive the real world at all, but only effects of it, that is, our sensations. Further, it asks us to think that these are produced by a substance totally unlike them—an invisible something which causes us to see colors; an intangible something which causes our sensations of hardness and smoothness. Far better take the world as we actually find it, he concludes—a world of colors, tastes, feelings, sounds, odors—and leave myths about imperceptible material substance alone.

Thus to accept the world as experience shows it is to take it as a world of ideas. Now ideas cannot create themselves, but can exist only in a mind—they must be ideas for someone. Hence we must assume the existence of minds in which all the ideas, and so all that is in the world, exist. If there were no mind in the universe, there could be no ideas, and therefore no universe. For nothing can exist unless it is being perceived. This principle, *Esse est percipi* (*To be is to be perceived*), is the most central and the most difficult in Berkeley's system. It is a familiar fact that color may alter in changing light, and disappear in total darkness, and we are acquainted with analogous changes in the other qualities. If we regard these qualities as *effects* upon human organisms like our own, we may be willing to agree that in the absence of such an organism, the effect or sensation of color, sound, or flavor might have no existence. Now it might be agreed that the particular sensation which we call sound could not exist when a tree falls where no one is

present to hear. But how about the tree itself? Could it fall, or could it even exist, if no mind perceived it? Berkeley's somewhat breath-taking answer is that it could not! To understand this, we must recall that a physical object, for him, is only a group of ideas of sense—colors, hardness and whatever we perceive in it. If there were no perceiver, there could be no perception, and since the *object* is only a collection of perceptions, there could be no object. This does not mean, of course, that nothing can happen or exist which *I* do not perceive, for there are many other minds as well as my own. There are the minds of fellow-men, and in addition to these, says Berkeley, there is the ever-present mind of God. In the deepest solitudes, His mind perceives and establishes the being and order of events. He creates and constantly maintains, not a material world, but one which both His mind and ours can experience and comprehend—a world of ideas. For the sake of those who may not share Berkeley's religious beliefs, it should be noted that the substitution of *World-Mind* or some similar name for his more theological *Mind of God* need not affect the greater part of his philosophical system. The one requirement of a supreme mind is that it shall be capable of creating such a world as our experience shows us—a world of ideas—and only that which is mental, not material, can produce ideas. "Sensible things have an existence exterior to *my* mind; since I find them by experience to be independent of it. There is therefore some other Mind wherein they exist . . . as they did before my birth, and would do after my supposed annihilation."¹

If Berkeley's seemingly revolutionary system does not actually affect the world of every-day experience, neither does it oppose the procedure of the sciences. He merely insists that natural science shall concern itself with what human beings actually perceive, rather than with suppositious myths about unknowable matter. To him, "the splitting up of Nature, *i.e.*, of what we perceive by the

¹ *Three Dialogues between Hylas and Philonous*, III.

senses, into mental effects and material causes is both bad science and bad metaphysics. For it makes 'matter' the ultimate reality at the same time that it cuts off every way of knowing what matter is or whether it exists at all. . . . He restores to science its true object—the real world which we perceive. In this he has the support of the best present-day work on the scientific theory of Nature, e.g., in A. N. Whitehead's writings."¹

However, Berkeley's position is not without serious difficulties, among which the following may be suggested briefly:

1. Berkeley, as we have seen, banishes matter from his world on the ground that our minds experience only ideas, which do not and could not represent something so completely unlike themselves as material substance. If not knowable, it could only be supposed to exist as a *cause* of these ideas, but inert matter could not cause mental activity. Now why is not a similar argument applicable to the mental or spiritual substance which Berkeley insists upon maintaining? If we are to discard a substantial base in *things* because we have only ideas of them, why must we not do the same with substantial spirits or selves? No one of us ever perceives his *self* as a substantial entity. What we are aware of are activities of perceiving, feeling, reasoning, willing, remembering, or imagining. Why should a substantial self be assumed necessary to account for these? Certainly, if it existed, it would be very different in nature from them, for they are not substances. Why, as the philosopher Hume subsequently pointed out, if we follow Berkeley's method with regard to explaining physical objects, should we not apply the same method to mental life? We should then conclude that the *self* is not a substance, but an idea, standing for a collection of simple ideas, such as sensations, memories, and interests.

2. A further difficulty is seen in Berkeley's effort to avoid *solipsism*, or the complete isolation of each individual self.

¹ R. F. A. Hoernlé, *Idealism as a Philosophy*, pp. 97-98. Published by George H. Doran Company, New York, 1927.

He doubts the independent existence of all *things*, apart from minds which perceive them, but he does not question the reality of other minds than his own. On the basis of his reasoning, however, he must know *selves* as well as physical objects as *ideas* in his own mind. Even the Mind of God can be known to us only through our ideas of it. If carried to its logical conclusion, does not his argument prove too much? Does it not destroy the world of spirits as well as the world of matter, leaving to one only the impoverished and unusable fragment of a universe, *his own ideas*?

Sensations, ideas, or experience in any form can carry one no nearer to a *spiritual substance* than to any other kind. If God is a substance, I cannot know Him. If other people are substances, I cannot know them. If I am a substance, I cannot know myself. Experience shows only *function, activity, event*, and until philosophy learned to seek for the real nature of things in these terms, necessarily it was faced with hopeless dilemmas. The difficulties which have been noted in the case of the philosophy of Berkeley are important because they always have and always must arise in any system which is based on the conception of a pluralistic spiritual *substance*. They arise from the paradoxical nature of the conception itself. In freeing philosophy from useless assumptions about the substantial nature of matter, and suggesting that it be explained in terms of activities, Berkeley rendered a contribution of the highest significance. But in retaining the notion of substance as a basis of explanation in the mental realm, he involved himself in insuperable difficulties.

III. SPIRITUAL FORCE AS THE WORLD-SUBSTANCE: LEIBNIZ

There has been a persistent tendency throughout the history of modern science, as far as possible, to reduce all things to *motion*. One of the results we have seen already in the development of the present conception of matter, but the tendency may be noted even in the pioneer work of

Galileo and Kepler. The physical scientist is entitled to deal with that which he can observe and measure, and with mathematical or other inferences from it. He may let that be the end of the matter, never raising the question as to why, ultimately, things are as they are. But the philosopher must concern himself with questions of *Why?* Why should there be motion? What is its real nature? Is motion itself the final reality of things which occur in the world, or is there some permanent *force* behind, which causes the motions?

When the modern era of science dawned, men had been trained by centuries of habit to believe that all things which occur have causes—for anything not to have a cause was for it to be a *miracle*, and even miracles may be supposed to have supernatural causes. Qualities had been thought to have their causes in substance; why should not motion be expected to have a cause, too, in some kind of substance which could produce it? This substance need not be material, for it is difficult to think of something inert producing motion. Rather, the substance of motion will be a *force*. Such a permanent substance may account for the coming into being and for the ceasing of particular motions—a problem which had troubled the Cartesians. For if the sum-total of all motion in the world did not remain constant, the world would run down or, less likely, gather vast and unmanageable new activities. But if the total motion remains the same, what happens when a particular motion ceases? Why does it not simply go out of existence, leaving the world that much poorer in activity? When all present motions cease, the world would then be dead. Whence can new motions arise? If force be introduced as a constant source, the difficulty is removed. Whether at rest or expressing itself in innumerable motions, the total amount of force, it seemed, might remain the same. Furthermore, the motions of our world are not haphazard and chaotic, but orderly and interrelated. How was this to be better accounted for than by the supposition that all are forms with a common base?

This general position received classical expression in the philosophy of *Leibniz*,¹ a thinker of the greatest penetration and subtlety. By mathematics and logic, Leibniz reached conclusions which place him closer to contemporary science than any other man of his day, with the possible exception only of Isaac Newton,² and in important respects he was scientifically more "modern" than Newton.

Above all, Leibniz was in sympathy with the effort of the new scientists to reduce everything in nature to motion, though behind this motion he believed there must exist a force, which remains constant (cf. *Discourse on Metaphysics*, XVII, XVIII). By this force, he says that he means "*that in the present state of things which leads to their change in the future.*" It is this potentiality in things which constitutes the basis of their ever changing existence. In the course of its history, a thing may alter in a great variety of ways, yet it remains the same thing because the later forms are but expressions of a potential force which was present already in the earlier. Thus, an oak tree appears to be a very different thing than the acorn from which it grew—yet

¹ Gottfried Wilhelm Leibniz was born June 21, 1646, in Leipzig. His father, a jurist and professor of moral philosophy, died a few years later. Leibniz's early education was gained chiefly in his father's library. After studying at the universities of Leipzig and Jena, he received his degree at Altorf. His political career began shortly thereafter, when he accepted a post under the Elector of Mainz. Legal science and physics occupied the greater part of his thought. A diplomatic mission to Paris gave opportunity for study there of mathematics under the guidance of Huyghens—a pursuit which led him to the discovery of differential calculus. Later diplomatic missions took him to London. He lived for a time at the court of Hanover and Brunswick, as librarian and court historian, and later at the court of the first Prussian Queen, Sophie Charlotte. The founding of the Prussian Academy, as well as an academy at Vienna and one at St. Petersburg, were due to his work and influence. His death occurred at Hanover in 1716. A tireless worker, it was appropriate that a favorite motto should have been inscribed upon his coffin: "As often as an hour is lost, a part of life perishes."

Among his principal philosophical writings were: *Discourse on Metaphysics*, 1685; *Monadology*, 1714; *Theodicy*, 1710; *New Essays on the Human Understanding*, first published in 1765. Of voluminous correspondence, the most important philosophically was that with Arnauld. In addition to philosophical writings were many on political subjects and highly significant work in the field of mathematics.

² By coincidence, Newton and Leibniz seem to have conceived the idea of differential calculus at about the same time, independently of one another. Leibniz was the first to publish his discovery, but the idea appears to have occurred first to Newton.

fundamentally they are one, for the oak is but the expression or realization of potentialities which were already in the acorn. Indeed, it was these potentialities to produce an oak which constituted the very essence of the acorn; it was they which made it what it was. Similarly, in our own lives we are never precisely the same at any two moments; to live is to experience change, at least in time, and in fact also in the flow of our thoughts and experiences. We remain the same people despite these changes from birth to death because the changes in some way *belong to us* and realize our potentialities. To have one and only one thought or experience would not be to experience what we know as *living*, for living consists of a changing succession of events, a coming and going of thoughts and experiences. The procession is not something outside of and altogether separable from us—for it to stop would be for life itself to cease for us, as conscious human beings. Sensations, thoughts, desires—what are these but activities within our own minds and bodies? They may refer to that which is outside, but to experience anything in the external world is, more accurately, for Leibniz, to experience activities within oneself, which are taken to represent something external. If one views Mt. Etna, what one really secures is a number of activities of sight, thought, and emotion within oneself. This does not mean that Mt. Etna may not exist when no one is looking at it, but it does mean that one's total *experience* of the mountain consists of the activities involved within oneself in viewing it. Were our sight and mental powers different than they are, our ideas of Mt. Etna would be different, as, in fact, they probably are for the bird or insect which "sees" it. That is, our unique individuality and that which we mean when we speak of *ourselves*, may be spoken of simply as our potentialities, or ways of acting. Each individual mirrors the entire universe, but as the images in a mirror are affected by the nature of the mirror and the angle at which it is placed, so each individual sees the universe from his own point of view, or in terms of his own potential ways of reacting.

Such a philosophy, clearly, places extraordinary emphasis on individuality. The basis of this emphasis is elaborated by Leibniz in his theory of *monads*. Each monad is a simple substance, hence in regard to the number of substances, Leibniz is a pluralist. On the other hand, with regard to their fundamental nature, he is a monist—all monads are units of force or energy. Grouping together, monads constitute physical objects and all living things. But each monad, taken by itself, is indivisible, for if it could be divided, then its parts would be the ultimately simple substances from which things are made up—they would be the true monads. Being simple, indivisible units of force, the monads occupy no space and have no form. Having no parts, they cannot disintegrate, and therefore must be eternal (though Leibniz does believe that they were *created* by God). Monads are of three grades: (1) *bare monads*, which possess no conscious awareness of what is going on (these constitute the “matter” of our world); (2) *conscious monads*, which we find throughout the animal, and to some extent also the plant, world; (3) *self-conscious* monads, which are aware not only of their perceptions, but also of *themselves*, as beings possessing significance. These constitute the “soul” monads of human beings. Objects, being aggregations of simple monads, may be made up entirely of the first, in which case they are “material” or inorganic things—such as stones and water. If, with these *bare monads*, is joined a *conscious* monad, the combination constitutes an animal, while their union with a *self-conscious* monad constitutes a human being. In the case of a human being, the bare monads constitute the physical body, while the higher monad is his mind or soul. Like the notes of a symphony, the monads fit together harmoniously, because of a “pre-established harmony” effected by the Great Composer in designing the world. This harmony must be established in the original combination of monads in the world, since it could not come about later by the influence of one monad on another—for the monads cannot affect one another.

directly. Each possesses its own potentialities, which, indeed, are the very essence of itself—it *is* its potentialities. These it lives out, and it can live out no others. But since the potentialities of each are infinite, there need be no limit placed on its future development. Each may continue eternally, but it must continue to realize its own, not other, potentialities or natures. Development is simply unfolding. The entire universe is in a state of perpetual evolution. Even the bare monads of “brute matter” are such only because they are “slumbering”—they may gradually awaken and realize the further powers which lie within them. The appearance of solid inert matter is due to *confused perception*, for in fact, all is activity. Somewhat as the spokes of a fly-wheel may become blurred and finally give the appearance of a solid disk as the wheel increases its speed, so our blurred perceptions of a world of motion give us the impression of solidity. “There is nothing besides perceptions and their changes to be found in the simple substance. And it is in these alone that all the internal activities of the simple substance can consist.”¹

Such a conception of the world represents a vast advance away from all views of substance as imperceptible and inert *stuff* underlying the physical world, and towards an account of things in terms of function and activity. The difficulties encountered in Leibniz’s position arise chiefly from the fact that, despite this advance, he yet has not been able altogether to free his thought from earlier assumptions. These are basically two:

i. Believing that a *collection* cannot possess genuine reality and permanence, but only its individual *members* can do so, he sought the final permanence of things in simple substances (*monads*). Being simple, they cannot be decomposed, hence they must be eternal. To call this substance *force* does not altogether remove its difficulty. If the monad is permanent substance, it is not the same as its activities. In his view of potentialities, he approaches close to the con-

¹ *Monadology*, Section 17.

ception of permanence as residing in the *order* of activities, but he does not quite reach it. As a result, he has all the difficulties involved in relating substance, whether called force or something else, to its accidents. From this, too, arises his problem of explaining how self-enclosed monads, each following its own way of acting, can constitute an harmonious world. If the monads are really separate substances, the problem is quite insoluble except by recourse to some such theological assumption as that of "pre-established harmony."

2. Leibniz accepted the older conception of *cause*. This is the reason, in fact, for his difficulty over substance, for *force* is introduced to provide the necessary cause of motions. Experience does not disclose force to us, but only motions. Hence belief in it is based on inference—but is the inference valid? Could a constant unchanging force produce change? Is force necessary? Only if we assume that motions must have a permanent underlying *cause*. The motions themselves do not show any such requirement; it merely *seems* to us that it is needed. But is this necessity that things have causes a necessity of their natures, or perhaps only of our ways of thinking about them? The question is one which we shall consider later, but it may be suggested that present-day science, while agreeing with Leibniz in many things, has avoided his most serious difficulties by turning away from his assumptions both of substance and final causes, and giving its attention exclusively to the order of activities. Whatever may or may not exist besides this structure of activities, nothing else constitutes the physical world *as we experience it.*

CHAPTER VIII

CONTEMPORARY VIEWS OF SUBSTANCE

I. SUBSTANCE AND MODERN SCIENCE

The question of the existence and nature of a basic substance behind the observable properties of things holds very secondary interest for the modern scientist. Nor is it difficult to account for this indifference.

1. The existence of such a substance cannot be demonstrated scientifically, we have seen, nor would a substance, if it existed, be susceptible of scientific analysis. Through experience, we may learn the ways and activities, the properties and relations of things, but no underlying *thing-itself* is ever observable. If shown to exist, it would still not be possible to consider it in relation to other *things-themselves*; it is in terms of *common properties* and *relations* that we are able to classify and measure things. Hence a unique *thing-itself* could not be subject to scientific classification or measurement. Since substance can neither be observed nor treated scientifically, the scientist, if he is to accept it as a reality at all, must take it as an *assumption*. This, of course has long been recognized, but it has been widely held that the assumption is one which *must* be made in order to give a rational explanation of aspects of the world which we do experience. If we observe activities, properties, relations, must we not assume that substantial entities exist in order to act, to possess the properties, and to enter into the relations?

2. The scientist is well aware of the necessity of making assumptions in order to carry forward his investigations, and the fact that substance must be taken as an assumption rather than a demonstrated actuality, in itself would not lead him to hesitate at its acceptance. But, he asks, is it a neces-

sary or even a useful assumption to make? Will it further the possibilities of valuable investigation? These questions he answers negatively. It is not because the existence of substance must be taken as an assumption, but because it would be a useless assumption for his work, that the modern scientist is not interested in it.

If the purpose of the sciences were to provide a perfect *copy* of the world of nature, then complete scientific description might require that the scientist deal with the problem of substance, inquiring what things ultimately *are*. But it is not the business of the sciences to prepare such a copy, nor is it their task merely to secure a large number of facts about the nature of things. This, as Cassirer remarks, would be quite a valueless undertaking. "If the significance of natural science consisted simply in reproducing the reality that is given in concrete sensations, then it would be a vain and useless work; for what copy, however perfect, could equal the original in exactness and certainty?"¹ The chief task undertaken by a science is not that of giving an accurate description of any specific object or event, but of discovering principles of regularity and order in the processes of nature. Only as science goes beyond particular given objects and events can it formulate the "laws" which they express. The investigations of the sciences we have seen, have to do with the interconnections of things—not with their basic and ultimate nature. Their explanations have to do with the regularities or structural order which may be revealed in these interconnections. As a science becomes more highly advanced and abstract (*e.g.*, physics), it gives relatively less attention to the mere collection of data about particular objects and events, and concerns itself increasingly with this structural order. Symbols, standing for general concepts, are employed in place of individual data. The relations of these symbols come no longer to be pursued merely by observation of the physical world, but abstract reasoning and

¹ Ernest Cassirer, *Substance and Function*, p. 165. Translated by W. C. and M. C. Swabey. The Open Court Publishing Company, Chicago, 1923.

mathematics are relied upon. The science, as it develops, thus tends to move away from the world of ordinary experience and into a realm of highly abstract speculation. The result may be that it will give to men various formulæ and devices by which to control the happenings of their world, but it will do this by giving them not *a copy* of the objects and events, but a highly schematized interpretation or code for dealing with them. In this interpretation, substance has lost its significance.

This does not mean, necessarily, that contemporary science dogmatically denies the existence of any substance, though certain scientists would deny it categorically, even scornfully. For example, Eddington, the British astro-physicist, writes: "One of our ancestors, taking arboreal exercise in the forest, failed to reach the bough intended and his hand closed on nothingness. The accident might well occasion philosophical reflections on the distinctions of substance and void—to say nothing of the phenomenon of gravity. However that may be, his descendants down to this day have come to be endowed with an immense respect for substance, arising we know not how. So far as familiar experience is concerned, substance occupies the centre of the stage, rigged out with the attributes of form, colour, hardness, etc., which appeal to our several senses. Behind it is a subordinate background of space and time permeated by forces and un concrete agencies to minister to the star performer." But, he continues, "Our conception of substance is only vivid so long as we do not face it. It begins to fade when we analyse it. We may dismiss many of its supposed attributes which are evidently projections of our sense-impressions outwards into the external world (*e.g.*, colour). . . . When I try to abstract from the bough everything but its substance or concreteness and concentrate on an effort to apprehend this, all ideas elude me; but the effort brings with it an instinctive tightening of the fingers—from which perhaps I might infer that my conception of substance is not very different from my arboreal ancestor's. . . . In the scientific world the con-

ception of substance is wholly lacking, and that which most nearly replaces it, viz., electric charge, is not exalted as star-performer above the other entities of physics. For this reason the scientific world often shocks us by its appearance of unreality. It offers nothing to satisfy our demand for the concrete. How should it when we cannot formulate that demand? I tried to formulate it; but nothing resulted save a tightening of the fingers.”¹

Probably a majority of scientists would be less confident in their denial of substance, if, indeed, they would care to make a denial. They would feel that science has adequate grounds neither for denying nor for affirming. Substance may have real being in the universe, but if so it must be regarded as a neutral something, out of sight and beyond the reach of physical investigation—hence well beyond the realm of scientific inquiry. The problem is one with which the metaphysician may be concerned in his quest for ultimate explanations, but it no longer holds interest for those whose pursuit is of that limited and specific type properly designated *scientific*. The silence which most scientists preserve on the subject is itself the clearest indication of their attitude.

II. THE IDEALISTIC VIEW OF SUBSTANCE

We have seen that for Spinoza and Locke substance became an unknowable *something*, behind the activities of minds and the properties of things. Berkeley went farther, pointing out the absurdity, as he thought, of belief in any material substance, and Hume continued the line of argument by showing the equal absurdity of belief in mental or spiritual substance. “Neither by considering the first origin of ideas,” he says, “nor by means of a definition are we able to arrive at any satisfactory notion of substance; which seems to me a sufficient reason for abandoning utterly that dispute concerning the materiality and immateriality of the soul, and makes me absolutely condemn even the question

¹ A. S. Eddington, *The Nature of the Physical World*, pp. 273–274. Quoted by permission of The Macmillan Company, publishers. New York, 1928.

itself. We have no perfect idea of anything but of a perception. A substance is entirely different from a perception. We have, therefore, no idea of a substance.”¹ When we do not so much as know the meaning of a word, it can scarcely aid us as an explanation. Hence Hume concludes that our wisest course is to take ourselves and the world as we actually find them. In experience we discover a variety of ideas succeeding one another in what we think of *together* as our *minds*. We also find a variety of qualities and activities, more or less regularly grouping themselves in what we call physical *objects*. Why should we assume that more than these groups of ideas and of qualities actually exists? “Philosophers begin to be reconciled to the principle, *that we have no idea of external substance, distinct from the ideas of particular qualities*. This must pave the way for a like principle with regard to the mind, *that we have no notion of it, distinct from the particular perceptions.*”²

It was from this starting point provided by Hume that probably the most significant of modern philosophers *Immanuel Kant*, began his work.³ For the greater part, his contribution to philosophy lies in the field of knowledge where he sought to discover the ways of thought and its possibilities. Our knowledge of the external world is strictly limited to that which may be experienced. We do not experience things-themselves, though Kant is willing to admit that such may exist. Hence we may know nothing of them.

¹ *The Treatise of Human Nature*, Part IV, 5.

² *The Treatise of Human Nature*, Part IV, Appendix.

³ For discussion of Kant's view of knowledge, cf. Chapter XIV.

Immanuel Kant was born at Königsberg in the province of East Prussia, April 22, 1724. His father was of Scotch descent, a poor man, by trade a saddler, and in religion a devout member of the pietist group. Young Immanuel's early evidences of brilliance led to opportunity to study at the University of Königsberg, where the remainder of his life was spent as a teacher. The quiet and regular routine of his bachelor life was rarely broken. His thought gradually ripened and grew more subtle—and to his friends less intelligible. In 1755 was published his first successful paper in which he anticipated essential features of the nebular hypothesis. His greatest work, *The Critique of Pure Reason*, was published in 1781—a second edition with alterations appeared in 1787. The best English translation is that by Norman Kemp Smith. Other writings included: *Prolegomena to Any Future Metaphysic*; *Critique of Judgment*; *Critique of Practical Reason*. His death came in 1804.

Our senses give us, not external objects as they are in themselves, but bare sensations of color, sound, hardness, etc. These "brute data of sensation" the mind must organize into objects, related to one another in intelligible ways. The work of organization involves, among other principles, the *categories*, or pure concepts of the mind itself. That is, they are not discovered through experience, but have their being in the nature of the mind. They are the principles of mental organization. Among these categories is that of substance. Viewed in this way, substance is not something discovered in the world, but it is a principle of mind, which is indispensable if we are to have any experience at all. It is not the basis of organization for *things-in-themselves*, but it is the basis of organization for *our experience* of things. So regarded, substance loses all vestige of a material stuff, and becomes a *structural principle* of mental activity, by which a variety of qualities and activities are organized into groups or *objects* of experience.

Contemporary idealism accepts wholeheartedly the criticism of any kind of material-like substance, offered by these earlier thinkers. Since the time of Spinoza and Locke, it has been clear that substance, if it exists, is unknowable. If an unknowable really exists, clearly we cannot know *that* it exists. If it be *assumed*, the only reason for the assumption must be that it assists in explaining the nature and behavior of that which *is* knowable. But how can an unknowable *something* assist us? If we attempt to use it to explain the properties of things, we must face the further question of *how it is related to these properties*. If its properties are parts of its nature, if it is made up of these properties, then it is not a *substance* at all, in the original sense. On the other hand, if the properties of things are merely *related* to a basic unknowable substance, which is the *thing-itself*, it is impossible to explain the nature of this relation. Now if we can know neither the substance nor how it is related to its properties, obviously *it* can explain nothing, and to assume its existence is but to burden all explanation with a ghostly presence.

Turning from any attempt to employ substance, whether material or spiritual, as a *substratum* of things, present-day idealism seeks to construct its account of the world and of the self in terms of a *structure of activities*. Things are what they are because of the nature of their organization. The only genuine and fruitful problem for consideration here is that of what kind of *order* constitutes the physical world and the human mind. With regard to the nature of this order, idealism holds a very definite position, which later we shall consider in some detail.

III. THE PRAGMATIC VIEW OF SUBSTANCE

The real founder of *Pragmatism*, as a philosophical movement, was the American philosopher, *William James*, though with characteristic generosity he gave credit for its fundamental conceptions to Charles Peirce.¹ In the strictest sense, pragmatism does not present a metaphysic, and it is unfortunate, perhaps, that it should be first introduced in our

¹ William James was born in New York City in 1842. In addition to attendance at American schools, he studied French at Geneva and German at Bonn, and devoted himself for a time to painting. Attending Harvard, after several changes of program, he received a degree in medicine. After a year of scientific study in South America with Agassiz, he returned to Harvard as an instructor in anatomy and physiology. His interest found focus in problems of the nervous system and of mental life, and he began certain psychological experiments. In 1880 his transference of interest to problems of philosophy and psychology was marked by appointment as assistant professor of philosophy. In 1889 he became professor of psychology, and in 1897 professor of philosophy. Possessed of rare personal charm, of a vivid and attractive literary style, and of exceptional originality and brilliance as an intellectual explorer, James held a position of leadership in that most distinguished group of philosophers ever assembled in an American university—including as it did, such men as Josiah Royce, G. H. Palmer, Hugo Munsterberg, George Santayana, and later W. E. Hocking and R. B. Perry. After some years of ill-health, James died in 1910.

Most important among his writings, many would name the *Principles of Psychology*, published in 1890. Other writings included: *Psychology, Briefer Course*, 1892; *The Will to Believe and Other Essays in Popular Philosophy*, 1897; *Human Immortality*, 1898; *Talks to Teachers on Psychology*, 1899; The Gifford Lectures: *The Varieties of Religious Experience*, 1902; *Pragmatism*, 1907; *A Pluralistic Universe*, 1909; *The Meaning of Truth*, 1909; *Memories and Studies*, 1911; *Some Problems of Philosophy*, 1911; *Essays in Radical Empiricism*, 1912. Cf. also the *Letters of William James*, published in two volumes, and Professor Ralph Barton Perry's *Annotated Bibliography of the Writings of William James*. Also *Essays Philosophical and Psychological*, published by philosophical colleagues at Columbia University in 1908, in his honor.

discussion in relation to a metaphysical problem. Yet with regard to substance, pragmatism has something definite and significant to say, namely, that there is no basis for the acceptance of any assumption that substance exists, and furthermore, that the subject is not a profitable one for philosophical discussion. "*The only things that shall be debatable among philosophers,*" says James, "*shall be things definable in terms drawn from experience.* Things of an unexperienceable nature may exist *ad libitum*, but they form no part of the material for philosophic debate."¹ There can be no profit in assuming or discussing that which does not affect human experience. "There can be no difference anywhere that doesn't make a difference elsewhere—no difference in abstract truth that doesn't express itself in a difference in concrete fact and in conduct consequent upon that fact, imposed on somebody, somehow, and somewhen. The whole function of philosophy ought to be to find out what definite difference it will make to you and me, at definite instants of our life, if this world-formula or that world-formula be the true one."²

It is primarily this insistence that philosophy give up all attempts to secure ultimate explanations and absolute origins, and consider all things simply in terms of their consequences for human experience, which characterizes pragmatism. For James, at least, pragmatism thus "does not stand for any special results. It is a method only."

Now it makes no difference whatsoever to human experience and conduct, James concludes, whether substance exists or not. The whole value and usefulness of things lies, for us, in their properties or attributes—we cannot so much as make out whether they have any substance beneath these properties—hence, it is properties alone which form the "sole cash value" of the thing for our actual experience. "The substance is in every case revealed through *them*; if we

¹ James, *The Meaning of Truth*, p. xii.

² James, *Pragmatism*, Lecture II. Published by Longmans, Green and Company, New York, 1907.

were cut off from them we should never suspect its existence; and if God should keep sending them to us in an unchanged order, miraculously annihilating at a certain moment the substance that supported them, we never could detect the moment, for our experiences themselves would be unaltered.”¹ Our only reason for assuming a substance behind the properties of things is that these properties seem to go together in certain groups. One combination of properties we call wood, another chalk, and yet another wool. The combination seems to require some unifying base, and this we call its substance. Thus, “The fact that certain perceptual experiences (as of color, weight, and hardness) do seem to belong together is thus all that the word substance means.” James supports his position by quoting David Hume, who says: “We have no idea of substance distinct from that of a collection of particular qualities, nor have we any other meaning when we either talk or reason concerning it. The idea of substance . . . is nothing but a collection of simple ideas that are united by the imagination and have a particular name assigned to them by which we are able to recall that collection.”²

Supporting the general position of James, *John Dewey* and *F. C. S. Schiller*, now the most distinguished pragmatic philosophers of America and England, respectively, find no need for the concept of substance. Philosophy, like all other of man’s intellectual enterprises, Dewey insists, can never escape beyond the bounds of human experience. Our sole test for the truth of any idea is the usefulness of its consequences. Ideas, theories, hypotheses, concepts—we possess no means to an absolute knowledge of their truth. By their fruits alone may we know and judge them. “That which guides us truly is true—demonstrated capacity for such guidance is precisely what is meant by truth. . . . Now an idea or conception is a claim or injunction or plan to *act* in a

¹ James, *Pragmatism*, Lecture III.

² Hume, *Treatise on Human Nature*, Part I, § 6. Quoted by James in *Some Problems of Philosophy*, pp. 123–124. Published by Longmans, Green and Company, New York, 1911.

certain way as the way to arrive at the clearing up of a specific situation. When the claim or pretention or plan is acted upon *it guides us truly or falsely*; it leads us to our end or away from it. Its active, dynamic function is the all-important thing about it, and in the quality of activity induced by it lies all its truth and falsity. The hypothesis that works is the *true* one; and *truth* is an abstract noun applied to the collection of cases, actual, foreseen and desired, that receive confirmation in their works and consequences.”¹

Now there is no way in which this practical test of truth may be applied to such an absolute conception as that of substance. The hypothesis that substance exists or that it does not, cannot be verified, for the reason that it makes no difference and has no consequences for human experience. “Things—anything, everything, in the ordinary or non-technical use of the term ‘thing’—are what they are experienced *as*. Hence, if one wishes to describe anything truly, his task is to tell what it is experienced as being.” The order of our world is an ever changing one. The rhythm and rate of various movements differ, and we are able to measure the swifter by the slower, the longer by the shorter, and so construct the intelligible descriptions of science. But nothing is eternally fixed; nothing is absolute. For a substance or anything else to be so, would be for it to be quite valueless and meaningless. “A thing ‘absolutely’ stable and unchangeable would be out of the range of the principle of action and reaction, of resistance and leverage as well as of friction. Here it would have no applicability, no potentiality of use as measure and control of other events.”²

The notion of substance is that of a something which remains the same but affects changes in other things—properties, relations, movements. But, insists Dewey, “Whatever influences the changes of other things is itself changed. The

¹ John Dewey, *Reconstruction in Philosophy*, pp. 156–157. Published by Henry Holt and Company, New York, 1920. The pragmatic theory of *truth* will be discussed in Chapter XV.

² Dewey, *Experience and Nature*, p. 71. The Open Court Publishing Company, Chicago, 1925.

idea of an activity proceeding only in one direction, of an unmoved mover, is a survival of Greek physics. It has been banished from science, but remains to haunt philosophy. The vague and mysterious properties assigned to mind and matter, the very conceptions of mind and matter (as substances) in traditional thought, are ghosts walking underground.”¹

Professor Schiller is no less certain in his denial of substance, as a substratum, underlying the properties of things. “It appears,” he says, “that, strictly speaking, all we know about a thing is its ‘accidents,’ and that we cannot comprehend how even its most essential properties ‘inhere in’ its substance. The substance thus becomes either a needless nullity or an unknowable, an inscrutable substratum which is conceived to underlie everything, but explains nothing, just because it is unknowable and can neither be experienced nor examined. In this form, therefore, the conception of Substance has no value for any purpose whatsoever, either philosophic or scientific.”² However, though Professor Schiller discards the familiar conception of a permanent substance beneath the properties of things, he does not leave us altogether without a basic entity to which he is willing to apply the name. This entity, far from being changeless, itself is nothing other than *activity*. It is not a changeless unknowable, but *activity* which constitutes the very heart of things, making them what they are. “*Activity is the substance; a thing is only in so far as active.* . . . And so we may define the ‘substratum’ which we have feigned as the hidden source of substantiality as being nothing but *a permanent possibility of activity.*”³ That is to say, we do not know what anything is in itself—nor do we so much as know what we ourselves *are*. But we do know what things do and how we act and feel. We should regard all things, therefore, and ourselves, as *being simply what we do, or have done, or*

¹ *Ibid.*, pp. 73–74.

² F. C. S. Schiller, *Humanism*, p. 222. Published by Macmillan and Company, London, 1903.

³ *Ibid.*, p. 225.

may do. Things and people are differentiated by the ways in which they act. The essential characteristic about all things, their very substance, consists in the permanent possibility of activity. This view, I think, would be congenial to Professor Dewey. In the philosophy of William James, too, there is present a fundamental substance, despite his rejection of popular ideas on the subject. For James, this substantial element which constitutes the basis of all things is *pure experience*. Experience is dependent upon nothing beyond itself, but is ultimate and fundamental. "Though one part of our experience may lean upon another part to make it what it is in any one of several aspects in which it may be considered, experience as a whole is self-containing and leans on nothing."¹

James sought to separate his philosophical conclusions on this point from any necessary connection with pragmatism, distinguishing them under the title of *Radical Empiricism*. One might be a pragmatist, he said, without accepting this view of experience, for pragmatism is essentially a method rather than a set of results. But methods involve assumptions and definite points of view, and one well may ask whether it is possible to apply the pragmatic method without giving to *experience* a position which makes it something very close to a basic substance. Anything and everything, we have seen, are to be taken simply as being "what they are experienced *as*." The reality of things, no less than their worth, is to be determined by their significance for human experience. Nothing is to be regarded as having absolute being or as being independent of experience. Such a view would seem to be less a giving up than a redefining of substance. But the redefinition is of genuine importance. In place of an unknowable and untouchable something outside

¹ James, *Essays in Radical Empiricism*, Lecture VII, p. 193. Published by Longmans, Green and Company, New York, 1912.

"On the principles which I am defending," says James, "a 'mind' or 'personal consciousness' is the name for a series of experiences run together by certain definite transitions, and an objective reality is a series of similar experiences knit by different transitions." *Ibid.*, p. 80.

the realm of our experience and practically useless to us, it substitutes a substance which is identical with experience, and so with all the activities of our conscious life. In place of a world which is static at base, it gives us a dynamic one. Things and people are not unchangeable substances which merely *have* activities, but at heart remain unaffected by experience and struggle. All things *are* activity, and find their very being in achievement. "True reality does not reside among the tangled roots of things. We have no need to dig down vainly to a 'subject' which 'is' not thought or will or feeling, but only 'has' them, in derision, in order to discover our true self. To find true 'Being' we must look upwards to the Ideal, not downwards to the unknowable. . . . Reality is not what transcends experience but what perfects it."¹

IV. REALISTIC VIEWS OF SUBSTANCE

The realistic attitude is widely accepted, possibly even dominant among contemporary philosophers. Protesting against Berkeley's reduction of all things to *ideas* dependent in conscious minds, and against the effort of later idealists to explain all things in terms of rational principles, the realist insists that things exist quite independently of mind, and that neither their existence nor their nature is altered by the fact that they are or are not known. *Esse* is not *percipi*; existence is not cognition. Mind is but a particular product among many other products of nature, and there is no justifiable reason for the claim that the rest of nature exists in, or is like, or depends upon it. Realism thus seeks to view facts objectively. If the realist can be acquainted with facts only as he experiences them, nevertheless, he will not regard them as primarily parts of *his* experience or incidents in *his* mental life, but rather as independent entities with which knowledge merely gives him a certain kind of contact. Thus Professor Drake defines a realist simply as one who believes

¹ F. C. S. Schiller, *Humanism*, p. 225. Published by Macmillan and Company, London, 1903.

that objects are independent of our knowledge of them: "All who thus believe that existence is far wider than experience—that objects exist in and for themselves, apart from our experiencing of them—are properly called realists."¹

Taken in this broad sense, almost everyone would be a realist. But clearly, the definition is too inclusive, too meager in differentiating detail, to delineate a philosophical position. It suggests rather than answers numerous fundamental questions, about which those who accept the definition may yet differ very widely. What are these independent objects of the physical world? How are they related to one another within *a world*? How do they come to be *known* by us? Realism has devoted the greater part of its attention to the last of these inquiries, the problem of knowledge, and in our later discussion we shall consider the conclusions at which it has arrived (cf. Chapter XV). Our present interest is with the nature of the entities themselves which make up the world of nature. Realists are generally agreed that they are not *ideas* or *experience*, but that they exist independently of our knowledge and of any mind.² But what more has realism to say with regard to their nature? What of their substance?

Traditional realism, from Aristotle to Thomas Reid, was inclined to assign an important place to the doctrine of substance. Modern realists, on the other hand, under the influence of idealistic and pragmatic criticism of the doctrine, are divided into two general groups: (1) the "Critical Realists," who accept the view that a world of substantial objects exists, but at least in the case of the more sceptical, e.g. Santayana, recognize that these objects are not perceived directly and that any substantial nature which they might

¹ Durant Drake, in *Essays in Critical Realism*, p. 5.

² For discussion of what is meant by this *independence* of objects, cf. R. B. Perry, "A Realistic Theory of Independence," in *The New Realism*, pp. 99 ff. (edited by E. B. Holt).

The doctrine will be considered, in relation to the nature of knowledge, in Chapter XV.

possess is unknowable;¹ (2) the "New Realists" in America, and with them, in general, the realistic school in Great Britain, which discards the idea of any substance other than *events, processes, or systems of experience.*²

I. The View of Critical Realism.

Critical realists readily admit that our knowledge of physical objects is deeply affected by our own organic psychological activities, which are involved in the process of experiencing them. Hence the object as it *appears* may be very different from the object as it *is* in its own independent existence. Our knowledge is of the effect or *datum*—that is, of *what it gives us*; it is never of the object-itself. Thus Professor Strong writes: "We have no power of penetrating to the object itself and intuiting it immediately, but are dependent for our information concerning it on the *effects* which it is able to produce within the body."³ Knowledge is compared to a portrait, which "to be a portrait, must be distinct from the sitter, and must at the same time somehow resemble or be referred to him." Thus Santayana says: "One problem is whether substance and appearance are distinct in their existence and have different conditions; to which the answer of the realist tends to be that their existence

¹ It would be an error, however, to attribute the scepticism of Santayana to all other members. *Critical Realism* received its first definite expression in a volume, *Essays in Critical Realism*, first projected in 1916, and published in 1920. Its authors were American philosophers of distinction: Professors Durant Drake, Arthur O. Lovejoy, James B. Pratt, Arthur K. Rogers, George Santayana, Roy W. Sellars, and C. A. Strong. Although regarding themselves as in fundamental agreement, numerous points of difference were admitted. Indeed, so divergent are the views of these men that accuracy would require their individual treatment, but unfortunately this is not possible here.

² The movement known as the *New Realist* in America dates from the publication of an article entitled: "The Program and First Platform of Six Realists," published in 1910 (*Journal of Philosophy, Psychology, and Scientific Method*, July 21, 1910). This was followed in 1912 by the publication of a volume, *The New Realism*. Its six authors were from among the younger philosophers of the country, but their list includes several of the most distinguished names in contemporary thought: Professors Edwin B. Holt, Ralph Barton Perry, William P. Montague, Edward G. Spaulding, Walter B. Pitkin, and Walter T. Marvin.

³ C. A. Strong, in *Essays in Critical Realism*, p. 225. Published by Macmillan and Company, London, 1920.

is quite distinct and their conditions entirely different.”¹ If this is true, it follows that we do not know things-themselves, but only their appearances. These appearances, presumably, tell us something, but by no means everything, about the thing-itself—its basic nature lies beyond their power to convey. A gulf separates our knowledge from the world of things-themselves, yet, if we are realists we believe in the existence of those things, even if it be primarily on *practical* and *instinctive* grounds. In practical life, “Everything is *as if* realism were true; and the *as if* is so strong that we may consider our instinctive and actually unescapable belief (in the reality of independent physical objects) justified.”² But again, we must beware of attributing so great a degree of scepticism to all critical realists.³ But where the belief in the reality of substance is supported chiefly by instinctive confidence and by the practical value of such a belief still it is asserted to be not only justifiable but actually inescapable. “There are those,” says Professor Drake, “who decry the category of substance as meaningless, since physics cannot tell us what it is. But most of us will continue to feel that if certain parts of Space are occupied, there must be *something* which occupies it; if there is motion, there must be *something* that moves. . . . But we can only speculate; its inner nature remains private.”⁴

The critic of this position asks what possible significance a belief in such a substantial “*something*” could hold for us. Can an effort to explain what we know by a “*something*” which we cannot know yield us anything more than mere words and guesses? Such a concept could serve but one purpose, namely, that of emphasizing the objective nature of things—their separateness from the mind which thinks about them. The qualities which we experience, it reminds

¹ G. Santayana in *Essays in Critical Realism*, p. 165.

² Durant Drake in *Essays in Critical Realism*, p. 6.

³ For example, in some cases a knowledge of other minds would be admitted.

⁴ The more advanced student of the subject should not fail to read Professor Sellars’ “A Defense of Substance,” in his *The Philosophy of Physical Realism*, Chapter XII. Unfortunately, its argument is too complex for summary here. Published by The Macmillan Company, New York, 1932.

us, are not just *our* experiences, but belong to something external to our minds and thoughts, though just what that *something* is, we do not and cannot know. It thus opposes utter scepticism. But it well may be questioned whether it is worth while to bring substance in if it is merely to serve this purpose of insuring independence of objects from our minds. Would it not be quite as simple to insist upon the independence of the properties themselves? This would avoid the awkward difficulty of having to explain how properties which we can know, actually belong to and express the nature of things-themselves, which we cannot know. Furthermore, it would make a surer foundation for realism. For it is rather difficult to understand just how a position which maintains that knowledge is separated from reality by an impassable gulf, so that we never can know real things, but only their "effects" upon us, as human beings,—is to justify its claim to being "realistic" at all. The world which we know would still not be the "real" world. Is not Professor Perry right in holding that "The principle of substance betrays realism into the hands of its enemy?"

2. The View of the New Realism.

Proponents of the New Realism, and with them, such other realists as Professor Alfred N. Whitehead and Bertrand Russell, are staunchly opposed to separating thought, by any impassable gulf, from that which is most real in nature. With Berkeley, they hold that nature possesses no material substance, unknowable to mind. Mind is within and a part of nature, and in its activities of perception it discovers directly, not merely *effects*, but that which is actual and real. We do not experience pale mirrored images of things, but the real things themselves, in certain of their aspects. Consciousness is not something absolutely different from the physical objects of which it is aware, but it is a function merely, of an organism which is produced by, and very much a part of, the physical world. Consciousness is simply a *selective response* of this physical organism to its physical

environment. "The new realism," writes Professor Perry, "while it insists, as all realism must, that things are *independent*, asserts that when things are known, they *are* ideas of the mind. They may enter *directly into* the mind; and when they do, they become what are called 'ideas.' So that ideas are only things in a certain relation; or, things, in respect of being known, are ideas."¹ If it seems incomprehensible that things should thus enter into consciousness and *be* ideas, yet at the same time, remain something objective and independent of minds, it is because we retain a notion of these objective things as external substances. Let us give up the conception of minds and of things as distinct substances, and come to look upon both, not as ultimate simple entities, but as complexes. Either a mind or an object may then be seen, on analysis, to be but a combination of qualities and relations. Moreover, the same qualities and relations may exist in objects as parts of their nature, or enter conscious experience to become constituent parts of its life. The same elements compose both mind and body, thought and things. To perceive something is to experience mentally a process which began as a purely physical one, in light vibrations and muscular movements of the eye. Likewise, to will something is to project a mental process out into bodily action. At innumerable points we discover that which begins as physical becoming mental, or that which is mental entering and affecting the physical world. "Then, instead of conceiving of reality as divided absolutely between two impenetrable spheres," concludes the realist, "we may conceive it as a field of interpenetrating relationships. . . . The relationship which invests a term with a bodily character does not preempt it; so that at the same time that it is bodily by virtue of one relation, it may also be content of perception by virtue of another relation."² In relation to the sun, Mars

¹ R. B. Perry, *Present Philosophical Tendencies*, p. 308. Published by Longmans, Green and Company, New York, 1921.

For consideration of the theory of knowledge supported by the new realists, cf. Chapter XV.

² R. B. Perry, *Present Philosophical Tendencies*, p. 311.

is a satellite, hence a physical body with certain physical relationships. When I perceive Mars, it is an idea, a part of my mental life, and ideally related to other parts of my experience. Mars may be both—both may be real aspects of its being, and “there is no more contradiction than in supposing that my uncle is my father’s brother.”

Lord Russell has developed the position that an object in the physical world is simply the system within which all possible aspects of the object are brought together. That is, a silver dollar, or a table, or any other such object may be viewed from a vast variety of different angles and distances. From no two does it appear exactly the same. Yet each presents a real aspect of the object—each shows it as it really is from one point of view. The object itself is what would be seen from all possible points of view, were they united. It may enter into many relationships other than those of sight and touch, and these, too, are aspects of its nature. The thing is not a substance, then, but a system. “An aspect of a ‘thing’ is a member of the *system of aspects which is the thing at that moment.* . . . All the aspects of a thing are real, whereas the thing (itself) is a mere logical construction” (of all possible aspects from which it may be regarded).¹ It is not substances, but the “sensible and intelligible properties of things,” which exist independently of our minds, and constitute all that there is to real objects. These “sensible and intelligible properties”—what are they? The answer is that they are *activities, processes, events*. A *thing* and a *mind*, equally, are to be defined as orderly systems of events. These constitute the *stuff* of which things and minds are made up, these and nothing more. It is the “go-togetherness” of events in certain groups, that constitutes the whole stuff of those groups—which we call *things*.²

¹ Bertrand Russell, *Our Knowledge of the External World*, p. 94. Published by W. W. Norton and Company, New York, 1929.

² Cf. C. Lloyd Morgan, *Life, Mind, and Spirit*, pp. 4, 226. Published by Henry Holt and Company, New York, 1926.

For literature on the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER IX

RELATIONS

I. PROBLEMS PRESENTED BY RELATIONS

By a *relation* is meant the influence or bearing which one thing has upon another. It is a name for the connections of things; the ways in which they "have to do" with one another. The world seems to be made up of a large number of objects and events, but if each proceeded in its own way without reference to any other, we should not be able to speak of them together as *a world*. Indeed, it would be erroneous even to speak of them as objects and events, for the moment we employ a *plural* term to designate two or more things, we thereby imply that they have aspects in common and are related by these common aspects into groups or classes.

Since any order and any system must have to do with some way in which its members exist or function together, it is obvious that all system and order depend upon relations. They represent the way in which relations go together—or if we may venture to describe it in terms so abstract, a system is simply a relationship which exists between relations. For example, the twenty-six letters of our alphabet may be related in many ways in words. These various combinations constitute the entire vocabularies of the languages which employ this alphabet. Each word represents a relationship between several letters. But a sentence represents a grammatical order or system, in which several of these word-relations are themselves related to one another. If all systems are relational, it is no less true that all relations belong within some system. All relations have to do with some order; they are relations of some *kind*. They may be relations of physical nature or of thought, relations of space or time, of cause, of number, of meaning, or of some other kind, but no relation

is ever completely unique and independent. All belong to some more inclusive system.¹ Thus it would be quite meaningless to talk of one thing being *before* or *after* another if this relation of before or after were not within some *time system*, as it would be to say one act was *better* than another without reference to some moral order.²

The number of various systems of relations in the world is vast. Molecules are such systems, unifying the relationships of their constituent electrons, protons, atoms. Every object is a system relating its parts and its qualities. Every social institution is a system within which its members are related. Every idea belongs to a system of relations from which it derives its meaning—for, as Kant pointed out, all meanings arise in relationships. Anything which had no relationship to anything else could have no meaning. But these smaller systems combine in larger ones which we commonly designate by such class names as animals, vegetables, minerals, and ideas. By this process of combination, we seem finally to reach two major systems, the system of *physical nature* and that of *thought*. How are these two related? Is either reducible to an aspect of the other? Or are both, in fact, aspects of a yet more inclusive world-system, which may best be thought of as *neutral* because, while it includes both the orders of mind and nature, yet it does not very closely resemble either?

The question of how the systematic order of thought, or *mind*, is related to that of the external world of *nature* is an exceedingly important one for human beings. The "practical man" devotes his efforts largely to securing food, shelter, comfort, and the satisfaction of such other varied interests as he may possess. He does not question deeply the connections of things, but assumes that they are connected, and devotes himself to achieving his ends. This involves

¹ Presumably there must be some *most inclusive* system which is not itself related within any higher system—as, for example, the *Absolute* of the absolute idealists or the *Universe* of the naturalists, or the numerous systems of the thoroughgoing pluralist. But these highest systems themselves cease to be relative. Though they contain relations within them, they themselves are absolute in some sense.

² For illustration, cf. the discussion of "First Cause" in S. K. Langer's *The Practice of Philosophy*, pp. 62 ff.

calculation on his part as to how the external environment will respond to his actions. How must he act if he is to bring about the results which he wishes? Relying largely upon past experience, he reaches a conclusion and puts it into action. If results occur as he had anticipated, he regards his thinking as having been *true*; if they do not, he decides that his thinking was in error. But even in the latter case, he continues to believe that thought at its best can give him truth about external things, and at least a limited power of control over them. Should he lose this confidence, then inevitably for him thought and action would be left destitute of any practical value whatsoever. If objects and events in the external world of nature were not actually so related that they could affect one another, and if these relations between external things did not in some way correspond to the kind of relations which we *think* of as existing between them, any effort on our part to *understand* or *anticipate* or *exert control* over them would be futile. If there is to be knowledge or intelligent action, we must be able to put things together in thinking about them, in a manner which somehow corresponds to the way in which they actually go together in the real world. Is this possible, and is there any way by which we may make sure that such correspondence actually exists?

We do not, of course, discover the system of the external world directly through our sense perceptions. Our senses continually give us instantaneous "snapshot" views of our physical environment. Each, in itself, is but an incomplete fragment. Colors which we see must be related with the hardness which we feel, the sweetness which we taste, or the sound we hear, as belonging to the *same object*. And these objects which come to us in fragments at any moment must be further related to one another and to past experiences, if they are to be thought of in any manner which has meaning for us. All of this work of joining together or systematizing seems, on analysis, to be dependent upon us, at least to an important degree. It is carried on in terms of the mind's ways of relating and systematizing. Is there any

way of assuring ourselves that organizing our sensations in this way, we actually get them together in anything approaching the way they are organized in the external world of objects?

There is, of course, the practical test. Every thought and purposeful action may be likened to an *hypothesis*. If fully stated, it would be something like this: *I believe that the world is related in such a manner that if I think or act in this way, the end which I desire will actually result.* Now if an hypothesis "works" and continues to "work"—we come to feel that it was justified, and in some way that it represents the real relation of things. No number of successful instances of its use, however, can give absolute certainty, but only a high degree of probability. There is always the possibility that it "worked" for some other reason than the one on which it was adopted. It is continually subject to further tests—and an hypothesis (such as that the world is flat) may prove false after innumerable instances of successful use. *Moreover, the results are always judged in terms of human thought—we decide that they are valuable or useless.* Hence a good hypothesis about the relations of the external world turns out to be no more than an hypothesis whose applications are judged to be satisfactory by a *mind* and in terms of a *mind's* standard of truth. This is a fact which pragmatism has emphasized, and with reference at least to our knowledge of external nature, the emphasis appears to be justified. Speaking of the status of all our *facts* regarding the structure of the external world, Professor Schiller points to their merely *probable* nature, and their constant liability to further questioning: "No fact can possibly claim exemption from this process; none can possibly deprive science of the right to reconsider its status. It won its title (as a *fact*) by making good its claim to be the *best* account of its subject available, and, to retain it, must *remain* the best. Its tenure is no other than that of the priest of Diana Nemorensis."¹

¹ F. C. S. Schiller, "Fact and Value," published in the *Sixth International Congress of Philosophy—Proceedings*, p. 298 (edited by E. S. Brightman). Published by Longmans, Green and Company, New York, 1927.

Can reflection go no farther than practical consequences of its beliefs in determining the structure of the external world? Can it ascertain nothing more as to the *real* relationships of things? It may be that the conclusions of the sciences in the end are dependent upon judgments of value, but it can scarcely be denied that these sciences seek and believe that they secure some kind of knowledge about the real relations of things. To deny this would be to deny even the value of at least the theoretical sciences, for that value arises chiefly from the validity of their accounts of relations. "The classification of facts, the recognition of their sequence and relative significance," has been described as the primary function of the sciences.¹ "Classification," "sequence," "significance"—all of these have to do with relations. Yet it is true that the sciences deal with functional descriptions, and do not ask what, ultimately, a relation really is. With this latter problem, since *relation* is a concept which our minds consider and employ, it would seem that some ground might be won by a determined effort to discover quite precisely what we mean by it. Surely there is the possibility that by scrutiny of our knowledge, we may ascertain how far our general idea of the nature of relations, and our ideas of specific types of relations, are consistent. Before considering these more critical questions, however, it may be well to recall the chief types of relations which appear in our experience. For, fortunately for the investigator, relations need not be treated singly—they seem to group themselves as belonging to a few general classes or types.

II. TYPES OF RELATIONS

Among the more common types of relations which we find in experience, the following may be mentioned.²

¹ Karl Pearson, *The Grammar of Science*, p. 6 (second edition). Published by A. and C. Black, London, 1892, 1900.

² John Stuart Mill says: "When we ascribe to any object the kind of attribute called a Relation, the foundation of the attribute must be something in which other objects are concerned besides itself and the percipient. As there may with propriety be said to be a relation between any two things to which two correlative names are or may be given, we may expect to discover what constitutes a relation in general,

1. Spatial Relations.

Physical objects, including our own bodies, appear to occupy definite positions in space. These positions seem to be both joined together and separated from one another by intervening space, which may be occupied by other objects, or only by air or ether, or, in the case of interstellar spaces, possibly they may be "empty." Though it never seems possible to think of a block of space, say a cubic foot, being removed from one place and put in another, leaving an absence of space where it had been, nevertheless it does seem possible for bodies to move about *in* space. Such movement of a given body changes its spatial relations to all other bodies—it becomes "nearer" to some, "farther" from others. Moreover, movement in space can be reversed, so that a body may move from one point to another and back again. So familiar is this conception, and apparently so well based on actual experience, that to restate it may seem idle, but, as we shall see (cf. Chapters X, XI), when it is examined with any care, the most obstinate difficulties arise on every hand.

2. Temporal Relations.

Physical objects seem to be related not only in space, as nearer or farther, larger or smaller than one another. They appear to be related also in time, as *before*, *with*, or *after* one another. Moreover, not only physical objects but activities and our own conscious states seem to exist at definite points of time, and to be related temporally to earlier and later events. Time seems to be a moving or flowing something, which never returns. In this, movement in time is unlike movement in space—for while it is possible to move

if we enumerate the principal cases in which mankind have imposed correlative names, and observe what these cases have in common. What, then, is the character which is possessed in common by states of circumstances so heterogeneous and discordant as these: one thing *like* another; one thing *unlike* another; one thing *near* another; one thing *far from* another; one thing *before*, *after*, *along with* another; one thing *greater*, *equal*, *less* than another; one thing the *cause* of another, the *effect* of another; one person the *master*, *servant*, *child*, *parent*, *debtor*, *creditor*, *sovereign*, *subject*, *attorney*, *client*, of another, and so on?"—John Stuart Mill, *A System of Logic*, Book I, Chapter III. (Published 1843.)

from one point in space to another and then return, it seems impossible to go from the present to the future, and then reverse the movement. In other respects, space and time are so similar in nature and so closely bound together that it is impossible to think of one without the other. Can one think of any space as real which exists at no time, or of any time as real which exists nowhere? A spatial object which *never* existed and an event which occurred *nowhere* alike would be regarded as fictitious. Thus space and time come to form the two dimensions in which the framework of all of our experience must be erected. But time offers many and to a large extent the same difficulties as space, when it is examined. So formidable, indeed, are these difficulties that in regard both to time and space, science and philosophy have been obliged to abandon ordinary conceptions.

3. Quantitative Relations.

Things seem to be divisible into *parts*, these parts being related together to make a *whole*. Thus we think of parts uniting to constitute single objects, or wholes, and again we regard these objects as themselves parts within larger wholes. Thus the human *individual* finds his life made up of various interests and incidents which he in some way combines into his existence as a single being. At the same time, he regards himself as a functioning part of larger groups—his community, nation, race. From electrons, or whatever may be more simple, at one extreme, to the universe as a whole at the other, all things seem to be related in this way, as wholes composed of constituent parts, and as parts within yet more inclusive wholes. It is easy to take this pervasive type of relationship for granted, but it is by no means easy to explain its nature. In what way does one part have anything to do with other parts? Is the whole no more than the sum of its parts, or are the parts to be looked upon as mere “fragments” which derive their significance and very being from the whole? Quantitative relations have to do not only with this relation of whole to part, but also with such con-

nctions of things as are denoted by "greater" and "less," "larger" and "smaller." Precisely what do such comparisons mean and what do they assume?

4. Qualitative Relations.

Things seem to be related to one another not only in their quantities, but also in their qualities. Not all *red* objects are identical, or even of the same shade of red, yet all are related by the fact that in color they do possess the quality of *redness*. So all sweet objects are related by their common quality of sweetness; all hard objects, as possessing hardness. But when two or more objects *possess* the same general quality, and so become related by it, how does this occur? Does redness, or sweetness, or any other such thing have some kind of being in the universe, independently of any particular object which contains it? Do they have some kind of independent existence as *universals*, and merely lodge in numerous particular objects from generation to generation? Or do these universals have their being solely in the objects? Or are they only in our minds, serving as ways of relating things, and so of making the world intelligible to our thought?

5. Causal Relations.

A further way in which we commonly think of things as having to do with one another is causal. We regard one thing as being the cause or the effect of some other thing or things. Indeed, we have come to regard this form of relationship as necessary for everything which exists. Everything must have a cause, and everything must be the cause of various effects. A century ago and less, scientists enjoyed illustrating this universality in the causal connection of things by pointing out that one cannot so much as toss a pebble without affecting the gravitational influence of the earth, and so without having an effect on the farthest planet. Anything which one might do must set going a series of causes and effects which can never end while the world lasts—

and if one does nothing, that, too, must have its effects. Even miracles were ordinarily supposed to have causes, but of a supernatural kind. The world, it was argued, must have been created and, therefore, must have had a cause. God, alone, was uncaused, but He participated in the causal order by causing it to come into being. But the conception of this relationship of cause and effect, too, has disclosed serious inconsistencies, and today the scientist and philosopher have learned to treat it with extreme caution.

6. Logical Relations.

All thinking, we have seen, proceeds by relating. When the physician diagnoses a case and the lawyer prepares a defense, their task is to *bring together* evidence leading to a conclusion. Various items must be related together in a logical manner. A chemical formula is a symbolic picture of a set of relations; the solution of a mathematical problem is the development of a set of number relations. Indeed, to think rationally on any subject whatsoever is to relate ideas coherently, and in terms of a meaning which seems to arise from the way in which they *have to do with one another*. Furthermore, we believe that by this logical relating of ideas we are able to design ways of manipulating the external world to achieve our ends.

Merely to have a perception of *red* or *cold* or *hard* is not to think—an idiot can do as much. The simplest activity of thought is found in judgment, which must always express a relationship between two things—which are designated in the judgment as a *subject-term* and *object-term*. To think about Socrates, for example, one must think *something* about him—perhaps that he is mortal. This is to relate the subject, Socrates, to the object, mortal beings. There are other ways of relating subject and predicate than by direct assertion that one belongs to the other, but the fact remains that wherever there is judgment in thought, or the expression of a judgment in words (*i.e.*, the statement of a *proposition*) there is present as its basis some kind of relationship.

Thinking has two aspects or phases—*analysis* and *synthesis*. All thinking either is a taking apart of something or a putting together of things. Both, obviously, have to do with relations. To be *true*, it is commonly supposed that thought must show its objects in the relationships which *really* exist between them.¹

III. WHAT IS A RELATION?

These may be the general types of relation which appear most frequently in experience, but still there remains the question: What actually is a relation? What is meant by relating, and how does a relation have to do with, or how is it connected with, the things it relates? "Suppose," suggests Bertrand Russell, "that I am in my room. I exist and my room exists; but does 'in' exist? Yet obviously the word 'in' HAS meaning; it denotes a relation which holds between me and my room. This relation is something, although we cannot say that it exists *in the same sense* in which I and my room exist."² If relations are not of the same nature and do not "exist in the same sense" as objects, then what is their nature and in what sense do they exist? Or, bringing the question nearer home, in what sense do *we think* of them as existing? For example, we may think of a certain apple as possessing the qualities of *redness*, *sweetness*, and *roundness*. If these actually are *its* qualities, they, of course, must be related to the apple—but what does this mean? Does it mean that they are *the same* as the apple? Is the apple then nothing more than a bundle of qualities? Or are the qualities different from the apple? If different, how can they be the qualities *of*, or *belonging to*, the apple? We may phrase the question in more general terms, by asking *how a relation is attached to the things which it relates*. It seems not to be identical with any *one* of them, but to be in some sense *between* them. But if it is not the same as the

¹ For discussion of the meaning of *truth*, cf. Chapter XV.

² Bertrand Russell, *The Problems of Philosophy*, pp. 139–140. Published by Henry Holt and Company, New York.

things it relates, how is it connected with them, so as to be *their* relation to one another? If a relation between two things or between a thing and its qualities is thought of as belonging to one of these exclusively, it could not connect it with anything else. If the relation between an apple and its color red belongs altogether to the *apple*, then it is not a part of *redness*, and cannot bring the two together. If the relation is a genuine part of the nature *both* of an apple and of redness, the two natures at this point would be identical, and the apple could not be or become any other color. But if the relation of the apple to *its* color red were not part of the nature either of the apple or of redness, but a something between, which connected them, how could this relation, which belonged to the nature of neither, yet be connected with either the apple or the color? The British philosopher, F. H. Bradley, has insisted that this is a genuine dilemma, and that it shows that relations must not be *realities*, in any ultimate sense, but must belong to the realm of appearance. For, he argues, if the relation is between two things, it must either not be *their* relation at all, or it must be connected with them. To be the quality of an apple, redness must be related to the apple. The relation, however, is not an intrinsic part of the apple's nature, nor is it an intrinsic part of the nature of redness—we may have apples which are not red, and redness which does not belong to apples. Hence the relation, being apart from the intrinsic nature of both, must be related to each by a further relation. This reasoning is repeated with regard to the relations of the relation to the apple and to the redness, and so on *ad infinitum*.¹

¹ "The relation is not the adjective of one term, for, if so it does not relate. Nor for the same reason is it the adjective of each term taken apart, for then again there is no relation between them. Nor is the relation their common property, for then what keeps them apart? They are now not two terms at all, because not separate." If a relation "is nothing to the qualities, then they are not related at all, and if so . . . they have ceased to be qualities, and their relation is a nonentity. But if it is to be something to them, then clearly we now shall require a new connecting relation. . . . But here we are hurried off into the eddy of a hopeless process, since we are forced to go on finding new relations (to relate the relations) without end."—F. H. Bradley, *Appearance and Reality*, Chapter III. Published by George Allen and Unwin, Ltd., London, 1893, 1897.

Many philosophers, however, do not agree with this conclusion. Two general theories have been developed with regard to the nature of relations: (1) which regards them as *external* to the things which they relate; (2) which regards them as *internal*. Necessarily, arguments on such matters must be highly abstract, but a brief statement may attempt, at least, to make some part of their general meaning intelligible.

IV. PLURALISM AND EXTERNAL RELATIONS

By saying that relations are *external*, it is meant that they do not belong to nor affect the inner nature of the objects which they relate. The object preserves its independence—it is the same object whether related in this way or not. In the deepest sense, its relations do not constitute all or any part of its being. They are "*something added to the terms*." They are something "*over and above*" those terms. Thus Professor Perry writes: "According to the theory of the externality of relations, terms acquire from their new relations an added character, which does not either condition, or necessarily alter, the character which they already possess." "The nature of things is prior to the relations into which they enter, and . . . the nature of these relations . . . is an extrinsic fact."¹ If I am in my room, neither I nor the room is fundamentally affected by the relationship. It attaches itself to me and to the room, but the attachment is an external one—the room would be precisely the same in its fundamental nature if I were not in it, and I would be the same.

The doctrine of externality of relations is of especial importance in the effect which it has upon the theories of knowledge, and it is here that realism has insisted most strongly upon it. Knowledge involves the relation of an object to a knower, or subject. If this relationship is *external*, it may bring the two together without altering the original nature of the object. That is, the object will not be fundamentally affected by the fact that it is or is not known;

¹ R. B. Perry, *Present Philosophical Tendencies*, pp. 319, 320. Published by Longmans, Green and Company, New York, 1912, 1921.

that there is a relationship between it and some knower, or that there is no such relationship. This is a flat denial, obviously, of Berkeley's principle, *To be is to be perceived*. If the relation of knowing or being known is external, then, as the realist asserts, "Knowing makes no difference to, and neither constitutes nor alters, that which is known."¹ The object may be related to a knower, but it remains unchanged by this; it would be the same if there were no knowers in the world. If it is true that the relationship of knowing does not change the objects known, then we may know not merely our *ideas* of things, but we may know things as they really are.²

In the field of metaphysics, the doctrine of external relations is significant especially because pluralism must depend upon it. For we may have pluralistic and monistic theories of structure, no less than of substance. All parts and systems within the world as a whole, of course, must be related, or they would not be *within* it, and, indeed, there would be no such unity as the world actually gives evidence of in our experiences of the interactions between its members. But does this mean necessarily that the world is one system to which all things belong, as fragments of a whole? If relations are external, it may be, on the contrary, that there are numerous systems, in no way dependent on one another, or on a superior system. They may function together as a "democratic" order of systems, related to one another in various ways, but neither dependent upon nor fundamentally affected by the relations. This position received the strong support, for example, of William James, who wrote: "Pragmatically interpreted, pluralism or the doctrine that *the universe* is many means only that the sundry parts of reality *may be externally related*. Everything you can think of, however vast or inclusive, has on the pluralistic view a genuinely 'external' environment of some sort or amount. Things are 'with' one another in many ways, but nothing

¹ E. G. Spaulding, *The New Rationalism*, p. 315. Published by Henry Holt and Company, New York, 1918.

² For further discussion of the realistic theory of knowledge, cf. pp. 300 ff.

includes everything, or dominates over everything. The word 'and' trails along after every sentence. Something always escapes. 'Ever not quite' has to be said of the best attempts made anywhere in the universe at attaining all-inclusiveness. The pluralistic world is thus more like a federal republic than like an empire or a kingdom. However much may be collected, however much may report itself as present at any effective centre of consciousness or action, something else is self-governed and absent and unreduced to unity. . . . Without losing its identity a thing can either take up or drop another thing, like a log . . . which by taking up new carriers and dropping old ones can travel anywhere with a light escort."¹

V. MONISM AND INTERNAL RELATIONS: THE CONCEPT OF THE "ABSOLUTE"

Opposed to pluralism and the doctrine of externality of relations stands its ancient rival *monism*, insisting that relations are *internal*. By *internal* it is meant that relations exist within and constitute an essential aspect of the things related. If A and B are related, it is pointed out, this must mean that they are parts within some larger whole which includes both. For example, if *Good* and *Evil* are related, even as opposites, this is because there is a more inclusive *Moral Order* within which both are aspects or members. Or, if one *citizen* is related to *other citizens*, this can only be because there is a *state* which includes all—if only one person existed in the world, or if no political organizations existed, it would be meaningless to talk of one's being a citizen. His nature as *citizen* depends upon his relationship within the more inclusive order. If only a single electron existed, it would not be an electron, but a universe—its nature as *an electron* depends upon relations within an atom. A single atom, again, is an *atom* because of its relations to other atoms, ordinarily within a molecule. The molecule

¹ William James, *A Pluralistic Universe*, pp. 321–323. Quoted by permission of the publishers, Longmans, Green and Company, New York, 1916.

derives its nature from relations to other molecules, and so on up to the final unity which binds all things together in a universe. If we draw a circle to represent anything, or any class of things, or any system whatsoever, the circle will have an outer as well as an inner side. Neither the outer nor the inner side of such a circle can exist without the other—hence, though they appear as *inner* and *outer*, to be opposites, this is the more narrow way of regarding them. In a larger sense they are dependent upon one another. Therefore they cannot be rightly considered as genuinely separable or independent. They are two aspects of a larger unity which includes both. It is so with the classes or systems which such circles may represent. We may speak of *an elephant*, but this is to think of a particular entity in terms of relations between this and other members of the class *elephants*. This is *an elephant* because of those relations. Elephants are animals, and hence to speak of them is to involve that which makes them animals—namely, their relationships to other animals. Animals, in turn, are a class of entities related to the physical world, and it is these relations which make them physical beings and a part of the world-order. The relationships are *within* the nature of the things related, and without the relations the natures could not be what they are. “Any definition of absolutely independent beings, beings that could change or vanish without any result whatever to their fellows, is, in all regions of the universe, natural or spiritual, a hopeless contradiction.”¹ We can never know or experience anything as an independent entity, for to know or experience anything is to relate it in some way to our ideas and activities. Anything which cannot be related in any way within our experience cannot be known, and, conversely, anything is known only in so far as it is related in our experience. If relations are merely attached externally to objects, and do not express their real nature at all, then

¹ Josiah Royce, *The World and the Individual*, Vol. I, Lecture III. Published by The Macmillan Company, New York, 1899, 1916.

from these relations, of course, we cannot discover the nature of the objects. Then we should never be able to experience or know things, but only our relations to them. This may be a sound and valid conclusion, it is maintained, but in no justifiable sense may it be called a *realistic* one. If we are to have real acquaintance with external objects, the relations in which we know them must express the natures of those objects. But if they do so, how can the object be said to be genuinely independent of them?

Thus monism argues that objects and knowledge (or mind) are related in nature, and therefore to be explained, not as independent entities or systems, but ultimately as diverse expressions within a larger world-order which includes and relates both. Since nothing can be known or can exist in the world without relationship to anything else (it must at least be related to the world if it is in the world) it must follow that all relationships and systems of relations ultimately constitute one supreme system, one universal order. Since this supreme system must include everything, there is nothing outside or beyond its limits to which it can be related. Hence it is not relative but absolute. If there were any outside system to which it was related, necessarily it would be relative, and the real absolute order would be that within which it and the other system were related. It is this supreme *system of all systems* which is intended when the monist speaks of *the Absolute*. By it he does not mean God, nor on the other hand, does he affirm any such metaphysical monstrosity as those with which he has frequently been charged by his critics. He may or may not believe in the existence of the God of religion—that question is a quite different one. By saying that there is an Absolute, he means only that there must be a single supreme system within which all things are related to one another, and since their relationships represent aspects of their own natures, all things are dependent upon other things and finally upon the order of the universe—because of it, they are what they are.¹

¹ For literature, cf. bibliography at the end of the book.

CHAPTER X

THE PROBLEM OF SPACE AND TIME

I. SPACE AND TIME AS THEY APPEAR

"It is not, I believe, too much to say that all the vital problems of philosophy depend for their solution on the solution of the problem what Space and Time are and more particularly how they are related to each other." With these words, Professor Alexander opens one of the most significant treatises which we possess on the subject.¹ The claim of preëminent importance which the statement makes for Space and Time in philosophical inquiry is not difficult to justify, for our whole conception of the nature of physical objects, of human life and experience, and of the universe itself depends upon our view of them. To realize the part which the spatial and temporal aspects of things have in our ordinary thinking and acting, one need but try to imagine the world without them. The objects around us would no longer be "around us," nor would they be separated from one another by various distances, nor extended as larger or smaller over varying amounts of space. Neither could they have shapes, for shape is determined by the limits of space which a body occupies. There would be no movement. The entire universe could then have no dimensions—not the width of a needle's point would separate its uttermost extremities. Likewise, in human experience, birth and death and years of intervening activities would be without any order of time—all would occur simultaneously. Between the beginning and the end of anything or of all things, no time would pass. Now, if the removal of the spatial and temporal aspect of things would so completely alter the

¹ S. Alexander, *Space, Time, and Deity*, Vol. I, p. 35. Published by Macmillan and Company, London, 1920.

world, making it quite unthinkable for us, it clearly follows that any significant change in our conceptions of Space and Time must bring with them important alterations in our views as to the nature of the world and of ourselves.

But why should any question arise as to the nature of either Space or Time? Do we not experience them continually? In what way do they present a *problem*? The reply must be, in the first place, that we do not experience them at all in themselves. We experience objects and events *in* Space and *in* Time, but we do not experience Space itself, or Time itself. But certainly we do perceive the distances *between* objects and we experience the interval of time *between* events—is this not to experience Space and Time themselves? To answer this question, we must remember a curious fact about the nature of both, namely, that Space seems to be divided into a great number of smaller spaces, and Time into a number of shorter times. A square inch, a square yard, and a square mile are all spaces, as a second, a minute, an hour, and a century are times. Even in the case of these smaller spaces and times, it is not they, but that which they contain, which we perceive—the space or the time units appear as relations between these contents. But if we speak, not of spaces or times, but of an all-embracing Space and Time which is supposed to include them, as a whole includes its parts, then of it we must agree that we have no experience. Believing that this, that, and the other particular space and time exist, we ordinarily *assume* that there is some *whole* of which these are fragments. Indeed, we seem forced to make the assumption, for no particular unit of space or time can be complete in itself. Each plot of space requires other space to surround it. Each moment of time requires other time to precede and follow it. We could not think intelligibly about objects or events without employing this whole of Space and Time as a framework, within which their particular spaces and times could be related. It was pointed out by Kant that Space and Time are

forms which the mind *must* employ if it is to organize its experiences intelligibly. How could the world, as we know it, and the objects which it contains, have any existence unless there were a Space and Time within which they could be located? If they are to exist, must they not exist somewhere and at some time?

If such necessity for a *whole* of Space and of Time exists, why should their reality be questioned further? For the reason that, however important a part they may play in our construction of experience, nevertheless they prove on examination to be most curiously contradictory conceptions. Before considering some of these contradictory aspects, it will be well to recall certain features in our ordinary ways of thinking. Commonly we think of Space as that which has bodies *in* it. Further, these bodies themselves seem to occupy portions of it. Presumably, the universe itself is *in* and occupies Space. To many this suggests the image of a great block or box, holding the universe as its content. Within space, bodies seem to move about, but space itself does not seem to move. A cubic foot of ice may be removed from one place and put in another; we cannot conceive of a cubic foot of space being moved, leaving a spaceless void where it had been, or adding space where it had not been. Does this mean that if no bodies whatsoever existed, space still might remain? Empty space would seem to be mere emptiness, and equivalent to nothing at all. Is it true, then, that "Empty space and time are a great nothing which is nevertheless required as a basis for all; two great nothings without which we cannot conceive any reality?"¹ Again, it seems possible to travel through space from one location to another, and on the other hand, there seems to be no way of getting from one to the other without going through the space which intervenes. The space between objects is thus both the basis of their separation and of their connection. Two cities may be both separated and linked together by the fifty miles between them.

¹ W. Windelband, *Introduction to Philosophy*, p. 95. Translated by J. McCabe.

Two further characteristics must be noted: (1) space seems to be something absolutely fixed, which can be measured and found to be the same by anyone; (2) our individual experiences of size and distance seem to give us reports of space which, in general, are reliable. These two propositions are related. If our experiences actually tell us anything reliable about space, they should reveal it as a fixed thing, which remains the same and which anyone may experience in the way we do. In fact, this is not the case. Who has not experienced some miles as longer than others? Were we to forget all conventional measuring rods and schemes of measurement, the distance from New York to San Francisco would be experienced as greater by the man who drove a "prairie schooner" of 1849 than to one who rides on limited trains. To the New England villager, his neighboring hills seem vastly higher and more imposing than do those same hills to a visitor from the region of the Andes, the Alps, or the Rocky Mountains. Houses, gardens, and distances seem greater, in general, to children than to adults. But such facts are usually brushed aside with the simple conclusion that measuring rods are absolute: they give us the real facts about spaces, while our experience is affected by fatigue and a variety of psychological influences. Obviously, we say, the mile which I walk when I am tired and that which I walk when fresh and alert are actually the same—they merely seem different to me. The mile of the measuring rod is absolute. Yes, but is it absolute with regard to fixed space, or only with regard to a fixed system of measurement? For example, if everything in the universe, including our measuring instruments and our own bodies, were to shrink simultaneously to one-hundredth of their present size, or to expand to one hundred times their present size, would we know that any spatial change whatsoever had occurred? The relations of measurement would remain fixed. Five thousand two hundred and eighty feet would still constitute a mile, regardless of whether the world occupied a hundred times less or more of space than at pres-

ent. That is to say, we have devised a system of measurement within which the relations of the various units to one another are absolute. Then, because it is conventional, and we find other people as well as ourselves continually using it, we come to feel that it is not just a human device, but a true representation of the real order of objective space itself. Characteristics which belong distinctively to the measuring system we come too easily to attribute to the nature of that which is measured.

In many characteristics, Time is surprisingly similar to Space. On fuller study, these points of similarity multiply, so that in the contemporary theory of relativity, we find the two no longer regarded as actually separate, but spoken of as *space-time*. Yet the two are not without at least apparent differences.

Time, like Space, seems to consist of an unbroken succession of parts. There are no timeless intervals in the course of a day or between past and present, as there are no spaceless voids between London and New York. Furthermore, Time also seems to be composed of measurable units; as we calculate distances by miles and feet, so we calculate duration by years and hours. Here, calendars and clocks serve as our conventional guides. We agree upon them as an absolute means of measurement, and attribute to psychological factors the fact that in experience some moments and hours seem incredibly longer or shorter than others. Again analogous to Space, if all of the processes of physical nature and human thought were slowed up to one-hundredth of their present rapidity, or accelerated to one hundred times their present rapidity, probably we should not be aware that any change had occurred. Our system of measuring time is itself relative, and gives us no adequate evidence of the nature of Time itself.

Though similar in many respects, Time differs from Space in its dimensions. Space has three, it appears—length, breadth, and height. Time has only one. All movement here is in one direction, from past to future. In Space, an

object appears to be able to move from one location to another and back to its starting point. It seems not to be so with Time. All movement is towards the future, and there is no return.

It is quite impossible, we have seen, to imagine the world of our experience with Space and Time removed from it. Who could think of tables and chairs as divested of extension, shape, and separation from one another? Who could deny that time actually has elapsed since Diogenes insulted Alexander at Corinth and Hannibal threatened Rome? Moreover, is science of no significance? Does not astronomy tell us of vast interstellar spaces, and geology of ancient Paleozoic, Mesozoic, and Cenozoic eras? To such questions the reply is obvious: no one thinks of denying that Time and Space have existence and are inseparable from the world as we know it. But the crucial problem remains: what is the nature of this existence? Where and how do they exist and what are they? The fact that they have so important a part in our world does not answer these inquiries.

The subject may not be dismissed by merely accepting Space and Time as they ordinarily appear, or as they are regarded by the uncritical man. So confused and self-contradictory are these ordinary conceptions, indeed, that to seem tolerable or useful they must be allowed to remain obscure.¹ If this uncritical man attempt to envision universal Space, he is likely to achieve little more than a cubic or cylindrical blur. If asked whether the units of space with which he is familiar in his environment are simply relations, or whether this space is some kind of substantial entity—something quite definite and independent, which has existence apart from the objects it contains—he is likely to reply that he thinks of it in *both* ways. But how can space both be relations between objects, and so dependent upon them, and also be an entity independent of

¹ For an advanced discussion of difficulties in familiar conceptions of Space and Time, cf. F. H. Bradley, *Appearance and Reality*, Chapter IV.

objects, which could exist if it were “empty”? Let us direct our attention, then, to certain fundamental difficulties which are presented by Space and Time as they *appear* to us.

II. SPACE AND TIME AS EXTENDED SERIES

Any portion of space may be divided—this *seems* to be an indubitable fact. A foot of space may be divided into two parts of half a foot each; these, into parts of a quarter of a foot; these, in turn, may each be divided, and their divisions divided yet farther. How far may the dividing process be carried? Theoretically, until a part has been reached which is too small to have further parts, which can be separated from one another. However, the ancient philosopher Zeno argued that that which is too small to have parts cannot be spread out over any space whatsoever—there must be no distance between its outer limits, or there would also be half that distance. The smallest possible part of space, therefore, would be a point, with no dimensions.

How is it to be explained, on the other hand, that these units, each of which has no extension, are yet able when put together to make up the broad expanses of the universe? The proposal that we regard units, which singly possess no extension, as joining together to constitute extended objects and the whole of Space, seemed to Zeno to be what the apparent nature of Space requires that we accept.

A similar dilemma faces us when we consider the nature of Time. It appears to be a succession of years, days, hours. Any one of these may be divided, and the divisions may be further divided until we reach a unit of time which is so slight that within it neither beginning nor end are distinguishable from one another, because the unit itself has no duration. Any temporal unit which has any duration whatsoever may be further divided into “earlier” and “later” parts. The ultimately simple part of Time, it would seem, then, must be a unit with *no* “earlier” or “later” parts within it—it must possess no temporal extension, but be

merely a *point-instant*. We speak commonly of the time-period which is present as *now*. If interpreted strictly, it would seem that by *now* can be meant neither past nor future time, but that which is between these. But if this present *now* lasts over any span of time, its end must lie in the future when it begins, as its beginning must be in the past before it ends. That is, within itself, there would be included a past and future time—which is contrary to what *now* means. Shall we conclude that since neither the past nor future can rightly be called *now*, the term must refer to a unit of time so short that it has *no* duration? Must we conclude, that we are situated in time at a point-instant, which has no endurance itself, and which is located between a past which is gone and a future which has not yet come into being? Is it necessary to think of Time as continuing through the centuries, yet as made up of a succession of *nows*, or *point-instants*, no one of which possesses any duration whatsoever?

Not only is such a supposition unacceptable on logical grounds, but also it is contrary to experience. The past may be remembered and the future may be anticipated, but remembering and anticipating are *present* activities—experience of whatever kind must always occur in the present. This commonplace observation leads to another—the present *as we experience it* is not a point, but a brief block of time. “It is a ‘saddleback,’” says Professor Adams, agreeing with William James, “and not a ‘razor blade.’”¹ That is, the *present* means to us in actual experience—not a logical point but a unit of duration such as that required for a *single perception*, or for a *single activity of thought*. In fact, these activities do have duration, however brief, but it is customary for us to regard the period in which each is occurring as a single present moment.² This unit of duration

¹ Cf. G. P. Adams, *Idealism and the Modern Age*, p. 209. Published by the Yale University Press, 1919.

² Such apparently “single” activities and perceptions are not actually single, of course, but may be analyzed into component aspects and parts—their *unity* essentially is one of *meaning*. A perception is a single experience on this basis, though many physical, physiological, and psychical factors enter into its construction.

which experience regards as the present is, in fact, only a pretended or *specious moment*, and frequently is so designated in philosophical discussion to distinguish it from the absolute or *logical present*, which is a point-instant. Because this specious present contains what appears to us as a single activity, we are not aware of the presence in it of either past or future. Within it, we seem neither to be *remembering* its earlier, nor *expecting* its later parts, but to grasp it as a whole and at once.¹ In the case of lightning or that of a meteor, due in part to the structure of the sensory mechanism, we seem to see the entire path of light at one time. The vibrations of the string of a violin are united in the experience of a single note of music. The blow of a hammer and the feeling of pain in one's finger seem to occur at the same time. All of this may be summarized by saying that in actual experience we are aware of *continuity*, as well as *separateness*, as a characteristic of things. We experience the physical world much as we read a book, not dwelling on each letter as it appears on the page, but allowing the eye to pass continuously across it, grasping words and combinations of words as units.

Is there any way in which the space and time which we know in experience, with its extension and duration, can be reconciled with the space and time demanded by logical thought, which must consist of point-instants? We can be content neither with a conception which is contradictory to reason, nor with one which contradicts so great a part of human experience. Some other solution must be sought, but first let us examine some of the other difficulties which our subject presents.

III. THE PROBLEM OF MOTION

The earliest suspicion that the natures of Space and Time must not *really* be what they *appear* was excited by

¹ The more advanced reader will find a most suggestive treatment of the subject in H. F. Hallett's *Aeternitas*, Chapters I-IV. Published by the Clarendon Press, Oxford, 1930. Also cf. Alexander's *Space, Time, and Deity*, pp. 120 ff.

difficulties encountered in attempting to explain *movement*. These difficulties were noted first in relation to spatial movements, but they appear again in the case of temporal changes. The work of the sciences has led us to a conception of the world as essentially dynamic. Certainly ordinary experience shows us continually objects which are in motion. But let us ask precisely what must occur when anything *moves*.

First, it must leave one location and come to occupy another. Second, apparently it must traverse the intervening space between the point where it *was* and the point to which it *comes*. So commonplace do these statements seem that they are likely to be accepted without question. But, idle as it may appear to do so, it can do no harm to examine them more carefully. What must happen if anything is to leave one location and come to be in another? Zeno, following Parmenides, is reported to have said: "That which moves can neither move in the place where it is, nor yet in the place where it is not."¹ If we agree with this, as it seems that we must, how may we explain the earlier statement that in moving, an object *leaves* one place and *comes to be* in another? If the object cannot move where it *is*, how can it cease to be there? If it cannot move where it *is not*, how can it come to be at any other place than where it now is?

A further difficulty confronts us in saying that, to move from one point to another, an object must traverse the intervening space. This, too, was pointed out by Zeno, with illustrations which have become classic. In order to move from one location to another, it is supposed that an object must pass through all of the points of space which lie between the two. Now we have seen in our earlier discussion that any extended portion of space may be divided into smaller and smaller parts until infinitely small—or as Zeno said, a

¹ Diogenes Laertius, *Lives*, IX, 72. For the teachings of Parmenides and Zeno, the student may find it convenient to refer to Bakewell's *Source Book in Ancient Philosophy*, pp. 11 ff. (published by Charles Scribner's Sons, New York, 1907), or to Nahm's *Selections from Early Greek Philosophy*, pp. 98 ff. (published by F. S. Crofts and Company, New York, 1934).

point with no extension and therefore no divisibility, is reached. It follows that if our object is to move from one place to another, passing through all of the intervening space, it must pass through all of the units which constitute that space. Further, in passing through, it must be in each of these for an instant, however brief. Thus a rapid-lens camera will photograph a traveling arrow at definite locations along its route. Now it is clear that an infinite number of points (or of infinitesimals), might be contained within the shortest distance of extended space. Each unit of space, whether an inch or a mile, though it seems to us limited, or finite, contains the same number of parts—that is, an infinite number. Now if a moving object must pass through an infinity of locations in getting to its destination, whether that be near or far, and if it must be in each for an instant, an eternity of time will be required to complete the movement. The same difficulty may be expressed somewhat differently by saying that before an object can move from any one place to any other, it must traverse half of the distance; before it traverses half, it must go half of that half, and so on. Thus, before an object can move any distance at all, it must go half of that distance, and again we are back at the necessity of traversing an infinity of points before movement can actually be started.

We may imagine Achilles having a race with a tortoise, suggests Zeno. Believing himself ten times faster as a runner, Achilles may offer the tortoise head-start, expecting shortly to overtake him. In such situations, Achilles does appear to pass the tortoise, but in fact, Zeno insists, he could not. For when Achilles had reached the tortoise's starting point, the tortoise would have advanced a tenth of that distance, and this would be continuously repeated. Further, by Zeno's reasoning, as we have seen, neither Achilles nor the tortoise should have been able ever to get started. His own solution, like that of Parmenides, was a denial of the *reality* of all motion. He did not question, of course, that things appear to move, or that for practical

purposes we may treat them as moving, but motion cannot be a genuine and ultimate part of the world, he held. We may not find such a solution necessary. Professor Montague, for example, in his book, *Ways of Knowing*, offers a very different solution of Zeno's problem. But the difficulty is one of which we must take account.

IV. THE INFINITY OF SPACE AND TIME

"If space *is*, it will be in something; for anything that *is* must be in something; and to be in something is to be in space. Space then will be in space, and so on *ad infinitum*." It was this argument which led Zeno to conclude that Space does not really exist. The conclusion may be distasteful to us, but what of the problem? Does not the conception of Space which we ordinarily hold require that a cubic foot of anything, for example, should not only contain, but also be *surrounded by*, space? Will the situation be altered if we imagine this cubic foot as expanding until it includes the physical universe, and finally, until it includes all space within itself? That is, would it not be necessary that even the *Whole of Space* should have an outer as well as an inner side? Must there not be further space within which any conceivable amount, even the Whole of Space, must be contained? Clearly this is a contradiction, and cannot be a true description of reality. If one imagines that Space ends somewhere, and that one is standing at its edge, looking outward, what would he see? Literally, he would see nothing. It would be impossible to throw a pebble forward or even to extend one's arm ahead of one, for this would be to throw the stone or extend the arm into nothingness. Not only is it impossible for us to imagine a mass of space surrounded by nothing, but it must be agreed that that which is limited by nothing, is in fact unlimited, or *infinite*.

An analogous difficulty arises in the case of Time. Did Time ever have a beginning? Will it ever end? If it did have a beginning, must there not have been a *before* as well as an *after* that beginning? If it should have an end, must

there not be a period *after* as well as *before* that end? To suppose that there was nothing before Time began is to suppose that it never had a beginning, but has always been; to believe that there would be nothing after its end is to believe that it will have no end. Thus to suppose that Time had a beginning or will have an end is to assume that there was a *time* before Time began, and that there will be a *time* when Time will have ended. To avoid this contradiction, it seems necessary to regard Time, as well as Space, as *infinite*. "*Timelessness*"—the characteristic of not being in time, or before or after any time, thus, "*is an essential constituent of time.*"¹

Why should we not conclude, then, that Space and Time are infinite, and thereupon dismiss the problem as solved? The reply to this is that to suppose they are so, again, is to accept a self-contradictory view of their natures. Let us note how the mind comes by these conceptions of a finite and an infinite Space and Time. The first account offers fewer difficulties. Neither space nor time, as we have said, are experienced directly by the senses, but both are constructed on the basis of data which the senses give us. Our idea of time is based on experiences of events succeeding one another—producing changes in the world of sight, touch, and sound. That of space, as John Locke pointed out, is due to two senses, *sight* and *touch*. Perceiving by two senses at approximately the same time, both patches of color and sensations of touch, such as of hardness, warmth, and smoothness, we combine them and look upon the combination as being, or belonging to, a single object which is extended in space. Certain effects of light and shadow become combined with feelings of farther and nearer. Objects which we *see*, frequently may be *touched* only by moving ourselves in their direction. Even in infancy we discover that we can see some things which we cannot touch. We also discover that by moving we can come to touch some of them, while

¹ Bernard Bosanquet, *The Principle of Individuality and Value*, p. 339. Published by The Macmillan Company, New York, 1912.

others, such as the moon, remain out of reach. This seems to be made intelligible if we but assume that objects are arranged at varying distances from one another in space. Our common ideas of limited and finite space and time are accounted for by the observed divisions of particular objects and periods of time, such as a day or year. But, Locke says, the really difficult question is "how we come by those *boundless* ideas of eternity and immensity, since the objects we converse with, come so much short of any approach or proportion to that largeness."

Locke's answer, in the form of an account of how men ever come to form an idea of anything as *boundless* or *infinite*, is of classic interest. "Every one," he says, "that has any idea of any stated lengths of space, as a foot, finds that he can repeat that idea; and, joining it to the former, make the idea of two feet; and by the addition of a third, three feet; and so on, without ever coming to an end of his addition, whether of the same idea of a foot, or, if he pleases, of doubling it, or any other idea he has of any length, as a mile, or diameter of the earth, or of the *orbis magnus*: for whichsoever of these he takes, and how often soever he doubles, or any otherwise multiplies it, he finds that after he has continued his doubling in his thoughts, and enlarged his idea as much as he pleases, he has no more reason to stop, nor is one jot nearer the end of such addition, than he was at first setting out. The power of enlarging his idea of space by farther additions remaining still the same, he hence takes the idea of infinite space." Our idea of infinite time is attained by the same route. "As by the power we find in ourselves of repeating, as often as we will, any idea of space, we get the idea of *infinite* immensity; so, by being able to repeat the idea of any length of duration we have in our minds, with all the endless addition of number, we come by the idea of eternity."¹

If this account of the manner by which the human mind reaches the idea of infinity is correct, it follows that the idea

¹John Locke, *Essay concerning Human Understanding*, Book II.

itself can be little more than a blur. It is that distance which has not yet been measured, or that time the parts of which have not yet been counted. Such a concept implies that if one could but go on measuring and counting parts of space and time far enough and long enough, it would finally be to reach *a number so great that nothing more could be added*—for an infinite is taken to mean that which is complete and to which nothing further can be added.¹ But how could any number be so great that another number, whether it were one or a million or another number of its own size, *could not* be added to it, or even multiplied by it? Anyone may add numbers of any size whatsoever together and continue to do so until dizziness overtakes him. He may then call the number which lies just beyond the horizon of his conscious counting “Infinity”—but in fact, as *a number* it is still limited and subject to the laws of finite quantities. Indeed, it shows no more of the marks of infinity than the simple *one* with which he started. To suppose that we can reach infinity by counting, or that space and time are infinite because of the very *large number* of their parts, is to rely upon a confusion of ideas. The infinite, as the French philosopher Renouvier pointed out, is not a number, but the absence of number. It is not that which merely has not been counted, but that which *by its nature* is incapable of being counted. We have seen reasons for believing that space and time must be infinite in their natures, but in experience we find them divided into limited measurable and countable parts. How are these characteristics to be reconciled?²

¹ We are not concerned at the moment with the more recent conceptions of “infinite” employed in mathematics. Their description would vary, of course, from this.

² For literature, cf. bibliography at the end of the book.

CHAPTER XI

MODERN VIEWS OF SPACE AND TIME

I. SCIENTIFIC AND PHILOSOPHICAL INTEREST

The importance of a satisfactory view of space and time was never felt more keenly by scientists and philosophers than it is at present. As evidence of this, one need only cite the interest which has attended the development of the *theory of relativity*. The sciences, we have seen, are concerned primarily with securing an accurate description of the interconnection of things. Hence their interest in space and time arises from the fact that a very large percentage of these interconnections cannot be understood apart from their temporal and spatial aspects. There could be little hope of valuable scientific explanation where there was only a confused and inconsistent notion of what it means for things to be in different places, or at different times, or separated by various distances, or to be of varying shapes and sizes, or in motion. Indeed, space and time may be regarded as the framework of that world which the sciences study. "Physics, beware of metaphysics," was Newton's injunction, and physicists long attempted to obey it, treating space and time in relation to physical phenomena, but avoiding questions as to their *real* nature. This attitude, happily, has now been quite completely abandoned. It is realized that effective handling of particular spatial and temporal relations cannot be divorced from an understanding of their general nature, and the scientist of our day, particularly the mathematical physicist, is devoting himself with zeal and no small success to the inquiry. At this point, at least, any fast division between scientific and metaphysical investigation is disappearing. The theoretical scientist is taking his place among the most eminent contributors to metaphysical

thought, and, on the other hand, is recognizing the significance for scientific progress of a proper treatment of philosophical issues. Professor Einstein recently expressed this increasing sense of unity when he remarked, in substance: "Formerly I cared little for metaphysics, but now metaphysics seems to me the one supreme interest."¹

Yet there are points of difference between the scientist's and the philosopher's interest in our subject. These arise chiefly from the attention of the latter to the problem of knowledge. Both agree that the external world cannot be just what it appears to us and nothing more, for the appearances are incomplete and inconsistent—we have noted some of these inconsistencies in the ordinary appearances of space and time. The scientist seeks to correct these by securing a consistent account of nature. This he attempts to do through comparison of many observations and by mathematical calculation. But the philosopher introduces the further element of the *knower's* own nature, and the ways in which he gains his experience. Thus, the scientist seeks a consistent explanation of the world in terms of its inner organization. The metaphysician asks the further question of whether this physical world as a whole, with its organization in space and time, is independently and ultimately *real*, or whether it is a world of *appearance*—that is, dependent for its characteristics, if not for its very being, on the nature of the minds that experience it.² We shall be concerned later with this general question, but for the present our interest must be directed toward one aspect: Are space and time independent realities or are they in some way dependent upon us? If no minds existed, would space and time continue to exist, and would they be what they seem to us? Are space and time limited, or are they infinite? Are they of the nature of some kind of substance, or are they only relations between things?

¹ Quoted from memory.

² To a goodly number of philosophers, notably those of the pragmatic school, this question is not of direct interest. It is avoided by declining to discuss questions of the *real* or *absolute* nature of anything.

II. THE IDEALISTIC VIEW OF SPACE AND TIME AS FORMS OF PERCEPTION

To understand much of the recent thought with regard to space and time, it is necessary to look back to an earlier source in the critical positions of Hume and Kant. We have seen that even the philosophers of Greece were critical of the reliability of ordinary conceptions of space and time, but they sought a way out of the difficulties by more consistent explanations of the external world. In the case of Parmenides and Zeno, it will be recalled, this took the form of a simple denial. But an explanation which does not square with human experience is unacceptable, however logical it may be. We are prepared to accept new explanations of why we have the experiences we do, but we cannot accept any account which contradicts experience. Space and time are genuine and inexpugnable aspects of the world *as we know it*. We will not give up the belief that they have their being in the real objective world, unless some other satisfactory explanation is offered as to why we apparently find them there. Such an explanation was suggested by David Hume, and was much further developed by Immanuel Kant.

Hume pointed out that neither space nor time is directly perceived; they represent a peculiar tendency of the mind to *associate ideas*. It would be more accurate, perhaps, to say that they are forms of association by which ideas are drawn together. Every idea in the mind has a tendency to associate itself with other ideas. These tendencies, or "gentle forces," lead to three forms of association: *similarity*, *relationship in space and time*, and *relationship as cause and effect*.¹ *Space and time represent ways in which ideas are related in the mind*. When Kant gave to Hume the credit for "awakening him from his dogmatic slumbers," it was primarily because of Hume's demonstration that we do not actually experience connected facts in the world, but *we join facts together*

¹ "To me there appear to be only three principles of connexion between ideas, namely, *Resemblance*, *Contiguity* in time or place, and *Cause or Effect*."—Hume, *An Enquiry concerning Human Understanding*, III.

according to the mind's principles of association. We do not see causation, nor space and time. But we construct an intelligible world for our thought and action by putting various facts of experience together, looking upon them as related to one another in space and time, or as causes and effects of one another.¹

It was when Kant was about forty-four years of age that he became impressed profoundly with the realization that our conception of the external world is largely determined by the way in which we regard space and time. Any matter which may exist in the world, he observed, must exist in space. If it is to exist in space, it follows that its nature must be like, or harmonious with, the nature of space. That is, the laws of matter must not be antagonistic to those of space, but must conform to them. Clearly, if physical nature did not conform to the laws of space, either it could have no existence, or else it would have to exist as some kind of a non-spatial order—for example, as a logical scheme or some other order of *thought*. But it is impossible for us to conceive of the actual external world, which daily we experience, without thinking of it as being spatial and temporal. If to take away these aspects would be to destroy our world of experience, it would seem to follow that its laws must be in complete conformity with those of space and time. If we consider the latter, then, we shall be able to discover very important facts about the nature of the former. This conclusion is further supported by the fact that space and time seem to come first—physical nature in some way coming to be within them.

Kant turned, therefore, to examine anew the nature of space and time, hoping to learn from them something of the real nature of the world. Assuming that space and time have a real existence outside of the mind, Kant found that he

¹ Various estimates have been made as to the exact period in Kant's life when he felt strongly the influence of Hume's scepticism regarding knowledge of the external world. Formerly the period was said to be between 1762 and 1766. Paulsen first questioned this, suggesting 1769. Others, including Erdmann and Royce, state it as the years following 1772. In 1772, Kant was forty-eight years of age.

could make diametrically opposed assertions about them, and further, that he could prove both to be true and necessary! He could prove that space and time must be infinite and without beginning or end. But also he could prove that they cannot be infinite, but must have both beginning and end. Likewise, he could prove that they are divisible into infinitely small parts which have no extension, and also that, since space and time must have extension, their ultimate parts must also possess extension, however small. What does this strangely paradoxical situation show? Kant concluded that it showed an error in the original assumption that space and time are *objectively* real. Nothing which is independently real in the universe could have a self-contradictory nature. The alternative, which he accepted, is that of regarding both space and time as *subjective*. They are not in the world itself, but they are in us. They are our *ways of experiencing* things. This does not mean that we can free ourselves of them.

A man who is color-blind may know that he is, but this will not give him normal vision. Or he may know that he is looking at a mirage—this does not change his experience. What it does give him is an understanding of it. Naïvely, we suppose that the external world is spatial and temporal because it is the nature of our minds to arrange experiences in these forms. Thus, Kant concluded, space and time are not indispensable to the real world, but to us. They are the *forms* in which we are able to experience things. We cannot experience space and time in the external world, but we can have no experience of that world without employing them.¹

The conclusion is of vast consequence to a conception of the external world. Its objects can be known to us only as spatial and temporal. Without these aspects, they become

¹ In his inaugural address at Königsberg in 1770, Kant added the further argument that we know too much about space and time to suppose that they are external and known through experience. We know, for example, that they are infinite wholes, which could never be learned through experience. They neither appear to belong to things as qualities do, nor themselves to be independent things in nature. They are forms of perception. Cf. pp. 262 ff.

unintelligible. If space and time are actually in us, as forms of perception, then these objects, too, are what they are because of our construction. From the outside world we receive only the stimulations to which our senses react with feelings of hardness, warmth, color, etc. These sensations are but the crude material which the mind builds into objects, and then organizes in terms of meanings, into a related world. The world as we know it, is thus a *phenomenal* world, that is, a construction of our minds—the *real* world outside of us is forever unknowable, because to *know* it would be to organize it in terms, not of its own principles, but of those of the *mind*. We agree in general regarding this seeming world of appearances, not because it is the real world, but because all human minds work in a similar manner. If one touch the key of a piano, the result is a musical note; if a typewriter, the result is a letter on a page. Each responds in terms of its own structure. And if we imagine the same note struck on two pianos, endowed with consciousness, they probably would agree that the *note* rather than an alien touch, in the external world had stimulated their reactions, since both felt it in the same way. If it be asked how such an interpretation of the world of experience as merely phenomenal fits with the work of the sciences, the reply, Kant thought, was that it fits perfectly. For our *phenomenal* world of experience is orderly and its relations may be determined with precision. It is this world which the sciences study—all scientists will agree that their field is limited. They deal with the relations and activities of things, never with *things-in-themselves*.

The general conception of Kant was further developed by Fichte and by Schopenhauer. Upon the latter, the influence of Eastern philosophy was strong. He quotes: "The fundamental tenet of the Vedânta school consisted, not in denying the existence of matter, that is, of solidity, impenetrability, and extended figure (to deny which would be lunacy), but in correcting the popular notion of it, and in contending that it has no essence independent of mental perception; that ex-

istence and perceptibility are convertible terms.”¹ “*The world is my idea*:—this,” he says, “is a truth which holds good for everything that lives and knows, though man alone can bring it into reflective and abstract consciousness.” The external world is but the objectification of *will*; it exists as a stage for action. If we consider only our experiences, “there is something astonishing, and sometimes even terrible, in the absolute uniformity of the laws of nature. It might astonish us that nature never once forgets her laws.” But if “the ghostly omnipresence of natural forces” astonishes us, let us turn from experience to note the nature of the mind which possesses it. Here the explanation of uniformity becomes clear. Nature is uniform because the mind behaves in an orderly way, organizing its material under the forms of causes, effects, space, and time. If “the inner meaning of the great doctrine of Kant has been fully grasped, the doctrine that time, space, and causality do not belong to the thing-in-itself, but merely to the phenomenon, that they are only the forms of our knowledge, not qualities of things in themselves; then we shall understand that this astonishment at the conformity to law and accurate operation of a force of nature, this astonishment at the complete sameness of all its million phenomena and the infallibility of their occurrence, is really like that of a child or a savage who looks for the first time through a glass with many facets at a flower, and marvels at the complete similarity of the innumerable flowers which he sees, and counts the leaves of each of them separately.”²

III. ANTI-INTELLECTUALISTIC THEORIES: BERGSON AND JAMES

Related in certain ways to Schopenhauer is the contemporary philosopher, *Henri Bergson*.³ His approach to phi-

¹ Schopenhauer, *The World as Will and as Idea*, I, 1.

² *Ibid.*, II, 26. A convenient edition of major portions of this work, edited by DeWitt Parker, has been published by Charles Scribner’s Sons, New York, 1928.

³ Henri Bergson was born in Paris in 1859. His early education was received in the public schools, and in 1881 he graduated from the *École Normale*. After teaching biology for some years, he was appointed to a chair of philosophy in the

losophy, however, was distinctly different from that of Schopenhauer, arising from a desire to gain a clear understanding of the fundamental concepts of physics. It was with regard to *time* that his most valuable insight was attained. Time, as it appears in physical calculations, is not the same, he discovered, as *real time*. The former may be measured in conventional ways and handled in scientific formulæ; the latter must be known by intuition.

There are two distinct ways of knowing things: (1) "by moving around the object," that is by recognizing its characteristics, or knowing *about it*; (2) "by entering into it," directly feeling with it. We know about things in the first sense by analyzing them; we know things in the second sense by immediate experience of them. What we discover by the first method of knowing will "depend on the point of view at which we are placed and on the symbols by which we express ourselves." The second "neither depends on a point of view nor relies on any symbol." Hence, it is correct to call the first form *relative* and the second *absolute* knowledge. A character in a novel is depicted by presenting various characteristics and activities. One takes these as symbols, says Bergson, and allows them to suggest the character behind them. But this is not equivalent to the kind of knowledge one would have of the character if he could get within him. We should then discover not only characteristics which he has in common with other people, but, also, that which is uniquely *himself*. The intellect uses the first way of knowing. Above all else, it seeks knowledge by *analyzing* its objects. It views them as static, and explicable in terms of their constituent parts. But life as we know it within ourselves is not static, but dynamic and flowing through time. Within our-

College de France in 1900. His election to the Institute came in 1901, and to the Academy in 1904. He has been both Gifford lecturer at Edinburgh and lecturer at Columbia universities.

Bergson's writings include *Time and Free Will* (Eng. tr. 1910); *Matter and Memory* (Eng. tr. 1911); *Creative Evolution* (Eng. tr. 1911); *An Introduction to Metaphysics* (Eng. tr. 1912); *Les deux sources de la morale et de la religion*, 1932 (translation probably to be published in 1935).¹

selves, we feel the flow of this vital energy, and we could not feel that any analysis which considered us as static combinations of aspects or parts reached our real selves at all. This inner reality, this vital energy and life-quality which is the essence of things, must be grasped, not by *intellect*, Bergson maintains, but by *intuition*. This *intuition* he defines as "the kind of *intellectual sympathy* by which one places oneself within an object in order to coincide with what is unique in it and consequently inexpressible."¹

If one regard time in a purely intellectual fashion, seeking to discover its nature by persistent analysis, one will encounter indeed the familiar difficulties with its infinite divisibility yet its duration. But the fault may not be with time, but with our method of considering it. The time with which the sciences deal, and that of ordinary descriptions of the external world, could scarcely be freed from the contradictions so often pointed out. But this is an intellectualized time—a mere symbol of *real time*, which each of us feels deep within his own being as a flowing stream of life energy. Intellectualized time is but the frozen surface, solid and immobile, beneath which the stream moves. What is true of the one may not be of the other. "There is, beneath these sharply cut crystals and this frozen surface," says Bergson, "a continuous flux which is not comparable to any flux I have ever seen. There is a succession of states, each of which announces that which follows and contains that which precedes it. . . . Whilst I was experiencing them they were so solidly organized, so profoundly animated with a common life, that I could not have said where any one of them begins or ends, but all extend into each other."² Thus, would we know the true nature of time, we must cease from attempting to explain the moving by what is immobile. Our ordinary explanations start with that which is static—some unit of time, and then ask how this can get into a moving succession.

¹ Bergson, *An Introduction to Metaphysics*, p. 7. Translated by T. E. Hulme. Published by G. P. Putnam's Sons, New York, 1912.

For further discussion of *intuitive knowledge*, cf. Chapter XIV.

² *Ibid.*, p. 11.

It is movement which we actually find in time, and then mistakenly intellectualize into static parts or points.

This conception may be clarified by Bergson's account of movement in space. Along the whole of such movement of anything, he points out, we can imagine possible places where the moving object *might stop*. If it does not stop there, we regard them not as stopping places, but as places through which the body passes. Our confusion arises when we argue to the effect that since a moving body passes through these points, they therefore in some way represent the movement itself. In fact, "they are not parts of the movement, they are so many snapshots of it; they are, one might say, only supposed stopping places. The moving body is never really *in* any of the points; the most that we can say is that it passes through them. But passage, which is movement, has nothing in common with stoppage, which is immobility. . . . The points are not *in* the movement, as parts, nor even *beneath* it, as positions occupied by the moving body. They are simply projected by us under the movement, as so many places where a moving body, which by hypothesis does not stop, would be if it were to stop. They are not, therefore, properly speaking, positions, but 'suppositions,' aspects, or points of view of the mind."¹

William James, the virtual initiator of the pragmatic movement in modern philosophy, shared Bergson's distrust of the powers of intellectual analysis to give us the truth about things. For him, as for Professor John Dewey and other leaders in the movement, it has seemed that intellectual analysis must deal with the world as something rigid and dead. In reality, the world as we know it is neither. It is "a going thing." As we know it, it is a world of process, of vital energies, of life. The methods of analysis are the methods of the post-mortem examination—they are unsuited to the task of discovering the nature of living process.

Thus, in the case of time, James says: "It is just intellectualism's attempt to substitute static cuts for units of

¹ *Ibid.*, p. 49.

experienced duration that makes real motion so unintelligible. The conception of the first half of the interval between Achilles and the tortoise excludes that of the last half, and the mathematical necessity of traversing it separately before the last half is traversed stands permanently in the way of the last half ever being traversed. Meanwhile the living Achilles . . . asks no leave of logic. The velocity of his acts is an indivisible nature in them like the expansive tension in a spring compressed. . . . The impetus of Achilles is one concrete fact, and carries space, time, and conquest over the inferior creature's motion indivisibly in it. He perceives nothing, while running, of the mathematician's homogeneous time and space, of the infinitely numerous succession of cuts in both, or of their order. End and beginning come to him in the one onrush."¹ In the same lecture, James repeatedly points out the impossibility of grasping the real nature of the world of experience by any logical analysis. Logical analysis insists upon separating things which are different; how, it asks, can that which is different also be the same? But experience continually finds *differents* dissolving into one another. For example, "Two spots on our skin, each of which feels the same as a third spot when touched along with it, are felt as different from each other. Two tones, neither distinguishable from a third tone, are perfectly distinct from each other." Similarly, in actual experience, we find moments of time, not rigid and independent, but dissolving indistinguishably into one another. One is not aware of any abrupt change when he leaves one moment of time and enters another. The course of time is that of a smoothly flowing river. As we move on its silent surface, there is no sense of the multitudinous drops of water which constitute its body. "Hasn't every bit of experience its quality, its duration, its extension, its intensity, its urgency, its clearness, and many aspects besides, no one of which can exist in the isolation in which our verbalized

¹ William James, *A Pluralistic Universe*, Lecture VI. Published by Longmans, Green and Company, New York, 1909.

logic keeps it? They exist only *durcheinander*. Reality always is, in M. Bergson's phrase, . . . a conflux of the same with the different: they compensate and telescope."¹ Indeed, James goes even farther, and insists that "The whole process of life is due to life's violation of our logical axioms." Our understanding has been corrupted and impoverished by the absolute trust which we have been taught to place in mere analysis, believing that we may discover the nature of things by examining their parts. "We are so subject," he writes, "to the philosophic tradition which treats *logos* or discursive thought generally as the sole avenue to truth, that to fall back on raw unverbalized life as more of a revealer, and to think of concepts (e.g., time and space) as the merely practical things which Bergson calls them, comes very hard. It is putting off our proud maturity of mind and becoming again as foolish little children in the eyes of reason. But difficult as such a revolution is, there is no other way, I believe, to the possession of reality." "Philosophy should seek this kind of living understanding of the movement of reality, not follow science in vainly patching together fragments of its dead results."²

IV. REALISTIC THEORIES OF SPACE AND TIME

So diverse have been the developments of realistic philosophy in recent years, and so involved are their theories of space and time with their main interest—the problem of knowledge—that no brief survey could possibly be an adequate one.³

The first task which confronted the *new* realism when it arose in the early part of the present century was that of pointing out the inadequacies of the philosophical system then dominant. This dominant system was idealism, which, after the manner of Kant, was convinced that space and time are dependent on mind. Realism usually has met this

¹ William James, *A Pluralistic Universe*, pp. 256-257.

² *Ibid.*, pp. 264, 272-273.

³ For discussion of realistic theories of knowledge, cf. Chapter XV. For the realistic view of substance, cf. Chapter VIII.

view by stoutly affirming their objective existence. Space and time are real in the real world, it has asserted. This real world is the great external world, which exists independently of any thought or mind. It is the world which we know and continuously experience. Mind is a thing among other things, developed in the course of natural evolution.¹

Realism thus starts from the side of objects rather than that of mind, in its explanations. At once the question is presented: What is the universal objective thing, if it is a single thing, from which all else develops? To this inquiry, various replies have been made by realists, but one of the most significant, that of *Samuel Alexander*, insists that it is "Space-Time."² The two are no longer regarded as separate, but, as in relativity theories, are recognized as essentially one.³ Without Time, Space would be a great blank, he reiterates—nothing whatsoever could happen in it—since, for anything to happen it is required that there be a time in which it happens—in *no time at all*, nothing whatever could happen. On the other hand, without Space, Time would "be a bare 'now' always repeated"—nothing could occur and nothing could endure if its occurrence or endurance were located just *nowhere*. *Motion* requires both Space and Time. Indeed, we may say more, thinks Alexander, namely, that motion not only requires, but *is the same* as Space-Time.⁴ For a body to move means that it does not stay at one point, but passes *successively* through various points in Space. To say that it moves *successively* through these points, means, of course, that Time is consumed in the movement, or that

¹ One may be a realist with regard to knowledge, however, without accepting this naturalistic view of mind. Cf. Chapter XV.

² Samuel Alexander was born at Sydney, New South Wales, in 1859. After attending the University of Melbourne, he entered Oxford, where later, from 1882 to 1893, he was a fellow of Lincoln College. Following this, he taught at Victoria University for a time, and from there went to the University of Manchester. There is no more eminent figure at present in British philosophy.

Alexander's writings include: *Moral Order and Progress*, 1889; *Space, Time, and Deity* (Gifford Lectures, in 2 vols.), 1920.

³ In view especially of the work of Minkowski, Einstein, and Lorentz. Cf. *Space, Time, and Deity*, Vol. I, p. 58.

⁴ Cf. Alexander, *Space, Time, and Deity*, Vol. I, pp. 60 ff.

the movement is not only through a succession of points in Space, but also through points in Time. If we look at the movement as a whole, each point in it represents where the object was at a particular time. If the object stayed in one of these points, it could not be said to move. Likewise, if it occupied all of the points at once (as an extended thing), it again could not be said to move. But if it is at one point at one time, and another at another, we say that it has moved. To move, then, is simply to occupy different points at different times. Stated more abstractly, this is the same as saying that motion is a union of Space and Time, or that motion is Space-Time.

With this conception of Space-Time in mind, Alexander proceeds to insist that it is the absolute first *stuff* from which all things spring. Since Space-Time and motion are really one, and since all things which have any reality to them must depend on these, they may rightly be considered, he thinks, as the source, or matrix, or ultimate reality, of nature. Is it more than nonsense to suppose anything is real which at no time was anywhere? But that which is somewhere at some time must be taken account of. Could anyone locate a ghost at a definite time in a definite place—giving indubitable evidence that the ghost actually was there at that time, we should be obliged to change our attitude towards ghosts quite completely. We regard them as unreal because we cannot locate them in this way. The belief in them is discarded and they are regarded as unreal by intelligent people —on the sole ground that they cannot be shown to have space-time characteristics. The consistent possession of these alone would be sufficient to establish their reality in the world—or indeed the reality of anything else.

This ultimate substance Space-Time (or Motion) develops, thinks Alexander, into complicated forms. Each of these new forms is a new *quality*. The first quality thus developed from pure Space-Time was *materiality*—or the bare quality of a *material* stuff. Further complication was brought about as motions became more complex, resulting

in the development of secondary qualities. Yet a further complexity produced *life*. Following this came *mind*—for mind, he believes, is to be explained best as a particular form of motion, the motion, namely, by which awareness becomes possible. That is, mind is merely a particular refined form of cerebral activity. And if there be Deity, says Alexander, this Deity too must be a form of Space-Time, since it is the only ultimate reality. Deity is identified with a *characteristic* which the world order develops. Thus it should not be confused with the usual meaning of *God*. Deity would be but a higher form than mind, which it is conceivable that motion might develop. But Deity, if thus regarded as a *quality* of universal being, is not a distinct personality, and is not the Creator of the world.

We have spoken especially of Alexander because of the profound systematic treatment which he has given to our subject, but it should not be inferred that all realists are in agreement with his views. For example, Professor Whitehead, if, indeed, it is correct to regard him as a realist, would look upon space and time as relative rather than absolute. For the greater part, American realists have been content to suggest, rather than fully develop their theory at this point. It is usually held that space and time are *wholes*, not merely made up by adding parts together, but by organization of parts by a certain specific type of relations. To say that a whole has parts is not the same as to say that it is nothing more than those parts. Two types of relationship must be differentiated: (1) *symmetrical* and (2) *asymmetrical*. A symmetrical relation is reversible, and holds equally for all things that it relates. Thus, if New York is two hundred and thirty miles from Boston, Boston is also two hundred and thirty miles from New York. An asymmetrical relation cannot be reversed in this way. It is not true that if New York has a larger population than Boston, Boston must also have a larger population than New York. Nor is it true that if King Edward VII was the father of George V, George V must also have been the father of Ed-

ward VII. The relation of whole to parts is usually held to be asymmetrical. The whole cannot be fully explained or defined simply by adding them together, but is something to be grasped independently. With respect to Space and extension, Professor Spaulding writes: "Any specific extension is distinct from both the parts and their relations. . . . But while the parts and the relations are *individuals*, and therefore *many*, and each belongs to a specific type, the *whole* that results from the organization of the parts is one. . . . For example, a finite line and the smaller lines that are its parts are of *one type*, for both are *extensions*; but the other type of parts, namely, the points, lack this specific characteristic. In respect to each of the several different kinds of parts, the *whole* that 'results' from their *organization* may have different and distinct characteristics. Thus, e.g., in respect to *smaller finite lines* as parts, a line is *finite*, or, if the parts are very small relatively (as units of measurement) *endless*, . . . the line is also *infinite*."¹ Thus a line is a single organization of parts, some of which may be finite, others infinite. *The line*, as the whole which combines both finite and infinite parts, may be regarded either as finite or as infinite. Which way we actually do regard it in a particular instance will depend upon our interests. If these are mathematical, we shall probably think of it as infinite; if they are practical, we shall consider it finite. Similarly, Professor R. B. Perry points to the logicians and mathematicians who do not concern themselves with metaphysical issues as to the ultimate nature of space and time, yet who deal successfully with them. Such men point out a frequent confusion between the conception of a *whole* as containing parts, and the idea that this whole can be understood only by considering or enumerating these parts. It may also be grasped as *whole*. Perhaps we cannot count the points in space, but we can know space, nevertheless. "It is true that a line cannot be 'made up' by adding point to point,"

¹ Edward G. Spaulding, *The New Rationalism*, pp. 452-453. Published by Henry Holt and Company, New York, 1918.

says Professor Perry, "but why should it be since we can define it as a whole? An infinite series cannot be exhausted by the successive enumeration of its terms; but why should it be, when we can define the law of the series? In other words, there is no paradox in knowing an infinite whole, once we rid ourselves of the notion that to know means to take a successive inventory of the content."¹ Returning to the problem of Achilles and the tortoise, Professor Perry suggests that Achilles' difficulty in making his way through an infinite number of points of space merely indicates that the "operation of overtaking is a continuous process." If Achilles must pass through infinite points of space, does he not have at his disposal infinite points of time in which to accomplish it? Further, we may explain the race through extended space in its own terms—we need not introduce other aspects of space relations, such as points, at all.

What may be regarded as a general attitude among realists with respect to space has been well summarized by Professor Boodin. And we may add that what he says of space would be true, also, with respect to time. "Absolute idealism has tried to rule out the existence of space by conceiving reality as, in the last analysis, a *logical* system. Now we would agree that in a purely logical system, real space can have no relevancy. We would also agree that logical systems must be taken account of as real aspects of our world. . . . We can formulate the facts of our world into significant systems of relations. But we must deny that logical systems are the only systems of our real world. However important in the field of description, they are abstractions from the movement and variety of the concrete world of flux. In fact, it is because they are abstractions that they are useful in the economy of life. The real unit of reality . . . is an energy system; and in this, real space figures as an indispensable condition."²

¹ Ralph Barton Perry, *Present Philosophical Tendencies*, p. 104. Cf. pp. 100-105. Published by Longmans, Green and Company, New York, 1921.

² John E. Boodin, *A Realistic Universe*, p. 247 (second edition). Quoted by permission of the publishers, The Macmillan Company, New York, 1916, 1931.

V. THE RELATIVITY THEORY

When one approaches the theory of relativity for the first time, it usually is with the feeling that here is something very new, very complex, and very baffling. If he be fortunate enough to possess requisite facility and training in mathematical calculation, he may attempt an approach through a study of its formulæ. If less fortunate in this respect, his recourse must be to one of the numerous non-technical accounts of the subject. Of these, some are likely to prove more enlightening than others, but none will be or can be fully satisfactory. The theory has been developed on the basis of certain mathematical conceptions, and an account which must omit these cannot hope to be fully accurate or adequate. On the other hand, every intelligent person has a general idea of the astronomical world which is based upon Copernicus' theory and a view of the world of physics which has been influenced deeply by Newton, though he may not have explored the mathematical calculations of either. Similarly, the general aspects of the relativity theory probably will become commonplaces to our grandchildren, and even now may be considered apart from knowledge of their intricate foundations, if we but free our imagination from its accustomed habits. The relativity theory requires this freedom, for there must be a change in our accustomed ways of thinking and imagining—an extremely difficult change to effect in oneself or in any single generation.

First of all, it may be well to avoid confusion by noting that the relativity theory has to do exclusively with the nature of the *physical* world. It does not attempt to show, certainly, that everything is relative, or even that everything in the physical world is relative.¹ It is not concerned with the fact that physiological and psychological differences between people (e.g., in powers of vision, or in association of

¹On common errors and the real limitations of relativity theory, cf. Bertrand Russell, *The A B C of Relativity*, Chapter II. Published by Harper and Brothers, New York, 1925.

mental images) cause them to experience things differently. Nor is it concerned with inaccuracies of human perception and thought. But its interest is directed to the actual relations which exist in the physical world, in so far as these may be discovered. Here the nature of space and time are of fundamental concern.

Physical calculations are very largely dependent upon measurement in some form. Distances and rates of motion must be ascertained if there are to be accurate descriptions of the physical world. Realizing the importance of accuracy in his measuring, the physicist has long given extreme care to securing reliable instruments. But one fact he did not know, namely, that however painstaking might be the construction of his measuring rod, its length, nevertheless, may vary with its position. The material of the rod is not responsible. Thus, if a rod moves at a high rate of speed, with its length lying along the line of its motion, it will be slightly shorter than if it moves at the same speed in a vertical position, or at right angles to its line of motion. This is known as the *FitzGerald contraction*, and it is due to the speed alone at which the rod is moving. The contraction has been verified by numerous experiments, but so slight is the shrinkage that it cannot be perceived by the eye, and for practical purposes it may be ignored.¹ But in dealing with measurements of great extent and with high velocities, as in astronomical work, it becomes of real significance. The phenomenon of a changing rod loses its strangeness for us if we recall that the rod itself is "a swarm of electrical particles rushing about and widely separated from one another." By setting a rod in motion, new magnetic forces are brought into play between these "electrical particles" with the result that they arrange themselves in a slightly different order. The result of this contraction is clear. Whenever great distances are to be measured, and a high rate of

¹ "If the speed is 19 miles a second—the speed of the earth round the sun—the contraction of length is 1 part in 200,000,000, or $2\frac{1}{2}$ inches in the diameter of the earth."—A. S. Eddington, *The Nature of the Physical World*, p. 5. Quoted by permission of the publishers, The Macmillan Company, New York, 1928.

speed is involved, as the movement of the earth, results will vary with the position of the measuring instrument. The scientist's *scale* of measurement will change.

We happen to be placed on a planet which moves at 19 miles a second around the sun. But this speed might be different. Elsewhere in the universe, bodies are moving at vastly different speeds. Were we located on one of these, moving possibly at 1000 miles a second, the contraction would be somewhat more important, and the universe would not only appear to science, but to our own eyes, in a different way if this speed were increased yet more. Eddington pictures the situation on an imaginary planet moving at 161,000 miles per second: "For this speed the contraction is one-half. Any solid contracts to half its original length when turned from across to along the line of motion. A railway journey between two towns which was 100 miles at noon is *then* shortened to 50 miles at 6 P.M., when the planet has turned through a right angle. The inhabitants copy Alice in Wonderland; they pull out and shut up like a telescope."¹ Now the point of interest in all of this for us is that we have been accustomed to think of the earth's view of things as the right view, whereas it is now clear that only those who live on a planet which moves with the same velocity as the earth could exactly agree with us. In other words, our view of the universe and our earlier scientific accounts of it are relative to the speed of the earth's movement. To call our view ultimately correct, therefore, is to assume that there is some unique rightness about our rate of movement, as compared with varying rates of other bodies. It is to take our *frame* of space as the one fixed and absolute frame. In fact, it will be seen that there might be as many frames of space as there are possible rates of movement. By a frame of space is meant an arrangement of locations of bodies, relative to one another. These locations will not

¹ A. S. Eddington, *The Nature of the Physical World*, p. 8. For a popular account of relativity by an eminent scientist, the student can do no better than read the early chapters of this book.

appear the same to observers on bodies moving at different speeds. And it can be due only to a form of human conceit that we continue to regard our own frame of space as showing their *true* locations. It was Einstein's contention that no single *right* frame of space exists. The frame of space for a body moving at one speed will not be the same as for one moving at a different speed. They do not agree, but neither can be called the *right* one. If a distance is greater when measured from one place than from another, both accounts of that distance are right in relation to the different frames of space, but neither is *absolutely* right—indeed, what can be the meaning of absolute rightness in such a case? Possibly the distance as it might be measured from a body completely at rest, but we know of no such and the constitution of the universe, so far as we understand anything about it, suggests that no such could actually exist. What can it mean to say that the really correct view of things is that which can be obtained under circumstances which appear to be non-existent, and the very conception of which probably evidences a badly warped imagination? "There is a direction of Cambridge relative to Edinburgh and another direction relative to London, and so on. It never occurs to us to think of this as a discrepancy, or to suppose that there must be some direction of Cambridge (at present undiscoverable) which is absolute. The idea that there ought to be an absolute distance between two points contains the same fallacy."¹ Because we change our positions with ease, but never attain a high velocity in traveling about the earth's surface, we find no difficulty in thinking of directions as purely relative, but we do find it difficult to think in the same way of distances. It was in 1905 that Einstein suggested that there may be a true law of nature to the effect that "it is of necessity impossible to determine absolute motion by any experiment whatever." We see, then, in part, the meaning of this statement, and of another which has been called the "hypothesis of relativity": "*The*

¹ A. S. Eddington, *The Nature of the Physical World*, p. 26.

phenomena of nature will be the same to two observers who move with any uniform velocity whatever relative to one another." Conversely, it may be added that the phenomena of nature will not be the same to two observers who move at different velocities.

We have said that relativity theory speaks of space-time, rather than space and time. By this it means primarily that the two must be considered together in measuring the relations of physical events. Formerly, it was thought possible to locate positions in space without reference to time, and to place events at certain times without reference to where they occur. For practical purposes this remains possible because practical life is concerned chiefly with events fairly near at hand and with movements which are relatively slow. But in the case of more distant stars, light may consume many years in traveling to us. The nearest star, Proxima Centauri, for example, might meet with a catastrophe which would destroy it, but we should continue to "see" the star as though nothing unusual had happened to it, for 4.27 years—the time required for light to travel the intervening 25,000,000,000,000 miles to the earth. Other more distant stars which we now "see" may in fact have gone out of existence before the time of Julius Cæsar. If light should suddenly cease to come from one of these tonight, we should date the event as at a certain time in the twentieth century. For an observer located closer to the doomed star, the event would have occurred years ago. For the star itself, it would have occurred centuries ago—in terms of *our* scheme of measurements. But in turn, events on the earth which seem present, if viewed in the spatial proximity which we occupy, will be present events in some other parts of space years from now. It follows that if one is dealing with large distances, it is necessary to give descriptions which are in terms of time as well as space. Thus, the universe of stars and planets, as we may see it tonight, does not and never has existed. For we may see at the present time numerous heavenly bodies in various posi-

tions with relation to one another. But the light which we now perceive as these various bodies must have traveled differing distances—we see one star as it existed five years ago, another as it was a century ago, and so on, depending on their varying distances and consequently on the time required for light to travel from them to us. In the case of more distant nebulae, the light which we now receive had completed much the greater part of its journey when the pyramids were built in Egypt—light from the most distant of the extra-galactic nebulae now visible through the telescope, traveling at the rate of 186,000 miles per second, requires a hundred and forty million years to reach us. In a universe where there is continual movement and change, it is obvious that much happens within even lesser periods. It is not enough to describe the physical world as it now appears to us—an accurate description must include the time factor. It must take into account the fact that its appearance, either to our eyes or to scientific instruments is a construction based on our particular relative position, with respect to its myriad parts. It is the kind of a universe we see and measure—from the point of view of its relation to the position of the earth.

What may be said of the relativistic view of space-time itself? First of all, it must be noted that the necessity is removed of choosing between two equally untenable views. This theory tells us that we need say neither that space is infinite, or that it stops. Instead, Einstein points out that it may be both finite and limitless. All that is necessary to make this possible is that space should be *curved*, returning back upon itself. It would then be analogous to the *surface* of the earth. One may travel around this surface, returning to his starting point, thus demonstrating that it is finite. On the other hand, though finite, the earth's surface does not extend to any point where it abruptly stops, but it turns back upon itself. Thus one can travel forward indefinitely far, perhaps returning to the place from which he set out, but he will never reach the "end" of the earth, as

people supposed one might in years gone by when they thought of it as an extended plane instead of a globe. Similarly, in the universe of space, a ray of light may travel forward forever without reaching the end of space—though if it travels far enough, it may return to the location from which it started. It has been estimated that a ray of light from the sun, if uninterrupted by meeting some obtuse object, will return to where the sun was when it started, in five hundred thousand million light years. This calculation arises from Einstein's original theory, which thought that the dimensions of space are determined by the amount of matter which it contains. The greater the amount of matter, the smaller must space be.¹ However, this point is a disputed one,² and we need not give our present attention to it.

The present point of interest is with the view that space and time are not absolute, but relative frames of reference, within which we view the locations of bodies in the physical universe always with reference to our own location. Further, it is with the union of space and time in a single system of space-time measurements. As Minkowski said, "Space in itself and time in itself sink to mere shadows, and only a kind of union of the two retains an independent existence." By introducing curvature into the nature of this union, a finite but limitless space-time is conceived, for which many of the contradictions involved in earlier conceptions are removed. To think in this way is to regard the space and time of ordinary life as subjective conceptions—"just as subjective," Jeans suggests, "as right hand or left hand, front or behind." Only the space-time continuum of the universe itself is objective. To it, all events which take place throughout the universe belong. The real inner nature of these events, and that of space-time itself, remain forever

¹ Dr. Hubble, of Mt. Wilson Observatory, has estimated that the mean density of matter in space must be about 1.5×10^{31} .

² For example, by de Sitter of Leiden, who developed a somewhat different cosmological view than Einstein's in 1917. Einstein's cosmology, however, should not be regarded as an intrinsic part of his relativity theory, but as one possible interpretation of the physical world made in the light of relativity.

unknowable to us. The single exception to this must be made in the case of that relatively small number of events which occur within ourselves and constitute our conscious lives. These latter present themselves as the familiar experiences of ordinary life—sights, sounds, and feelings.¹

¹ For literature, cf. bibliography at the end of the book.

CHAPTER XII

CAUSALITY

I. A CAUSE IS NOT A "FORCE"

In its most familiar sense, a *cause* is thought of as intimately related to some kind of *change*. If something changes, it appears that there must have been an agency which was responsible. The change seems to require a source, or reason for being—that is, a *cause*. Hence, in Aristotle's terminology, a cause is "the source of change." But in what sense can anything be the *source* of a change—especially, a change in something other than itself? How does a stone *cause* a broken window or rain *cause* the growth of wheat? In earlier times, a scientist might readily have replied, and even now many men would reply, that this is achieved by some exercise of *force*. That is, anything which is considered as being a *cause* was thought to exert a "force" which might produce a change somewhere else—the *effect*. But if we question or attempt to analyze this thing called *force*, we soon discover that not only do we never perceive it, but further, that there is not the slightest ground for assuming that any such imaginary thing exists. Our very idea of what we mean by the word is confused and indefinite. In fact, it means nothing more to us, and has no other purpose, than that of a cloak for our ignorance of *why*, in our experience, certain things seem regularly to precede or to follow certain other things. The Scottish philosopher, David Hume, has given the classic criticism of the notion of causal forces, and one which has led to its abandonment in scientific and philosophical thought.¹

¹ David Hume was born in Edinburgh, April 26, 1711. His father was a landed proprietor living on the estate of Ninewells in southern Scotland. His family's desire that he study law was distasteful to him, and he turned to the pursuit of letters and philosophy. Following an attack of hypochondria, he turned to practi-

"When any natural object or event is presented," Hume writes, "it is impossible for us, by any sagacity or penetration, to discover, or even conjecture, without experience, what event will result from it, or to carry our foresight beyond that object which is immediately present to the memory and senses. Even after one instance or experiment where we have observed a particular event to follow upon another, we are not entitled to form a general rule, or foretell what will happen in like cases. . . . But when one particular species of event has always, in all instances, been conjoined with another, we make no longer any scruple of foretelling one upon the appearance of the other, and of employing that reasoning which can alone assure us of any matter of fact or existence. We then call the one object, *Cause*; the other, *Effect*. We suppose that there is some connexion between them; some power in the one, by which it infallibly produces the other, and operates with the greatest certainty and necessity. It appears, then, that the idea of a necessary connexion among events arises from a number of similar instances which occur of the constant conjunction of these events; nor can that idea ever be suggested by *any one* of these instances, surveyed in all possible lights and positions. But there is nothing in a number of instances, different from every *single* instance, . . . except only that after a repetition of similar instances, *the mind is carried by habit*, upon the

cal interests and became a merchant, but his career in trade was brief, and shortly he was located in France, writing his *Treatise of Human Nature*. It was published in London in three parts (1739-1740), but failed alike to attract commendation or criticism—"It fell dead-born from the press," says Hume. Discouraged, he turned to the field of history. Shorter studies were followed by his *History of England*, which won the widest recognition and placed its author high in the ranks of British literary men. Returning to philosophy, he then became recognized as a distinguished leader. Entering public life, he traveled extensively on the Continent and as secretary to Lord Hertford, English Ambassador to France, became a figure of note both in literary and court circles in Paris. After a year as Under-Secretary of State for Scotland, he resigned to lead a life of "learned leisure" until his death in 1776.

Chief among his philosophical writings were: *A Treatise of Human Nature*, 1739-1740; *Enquiry concerning Human Understanding*, 1748; *An Enquiry concerning the Principles of Morals*, 1751; *The Natural History of Religion*, 1755; *Dialogues concerning Natural Religion* (published after his death). His *Autobiography* was published in 1777 by his friend Adam Smith.

appearance of one event, to expect its usual attendant, and to believe that it will exist. This connexion, therefore, which we *feel* in the mind, this customary transition of the imagination from one object to its usual attendant, is the sentiment or impression from which we form the idea of power or necessary connexion. Nothing farther is in the case. . . . The *first time* a man saw the communication of motion by impulse, as by the shock of two billiard balls, he could not pronounce that the one event (that is, the motion of the second ball when struck by the first) was *connected*: but only that it was *conjoined* with the other. After he has observed *several* instances of this nature, he then pronounces them to be *connected*. What alteration has happened to give rise to this new idea of *connexion*? Nothing but that he now *feels* these events to be connected in his imagination and can readily foretell the existence of one from the appearance of the other. . . . We may define a cause to be *an object, followed by another, and where all the objects similar to the first are followed by objects similar to the second*. In other words, *if the first object had not been, the second never had existed.*¹

If we do not perceive *causes* or *causality* in the external world, and if, with Hume, we must conclude that our idea of causal connection between things and events arises only from the fact that we note a regularity in the ways they precede or follow one another in our experience, of what value is the causal concept to us? Shall we conclude that, since it is shown to be so distinctly a human way of relating items of experience, it can be of no use to us in searching for a valid account of the real nature of the world? This has not been the conclusion of the sciences or of philosophy. The idea of a *causal force*, it is true, must be dismissed as altogether antiquated and without foundation or evidence in its support. But the fact remains that certain things do precede

¹ David Hume, *An Enquiry concerning Human Understanding*, Section VII, Part II.

Cf. also Hume's *A Treatise of Human Nature*, Book I, Part III, Sections II-IV.

or follow others with amazing regularity. Because of this fact, we are able to *predict* what is likely to happen in the world from one moment to the next, and we are able to a considerable extent, to control what does happen. We need not know *why* one thing is followed by another in order to know that if we wish the second to occur, we need but bring about the first. But how are we to "bring about" this *first* without assuming a causal force? In fact again we need not know the ultimate reason *why* the first thing comes about because of its "causes"—we need but see that those "causes" are present. But does this not lead us back through a series of sequences to some original cause—perhaps the human will, which exerts some "force" over the first unit in the series? If E regularly follows D, and D follows C, and C follows B, and B follows A, it is clear that to secure E, we need but bring about A. Must we not believe, however, that some *force* alone can account for this sequence?

In reply, we may note that for the sciences and philosophy, at least, the physical world is one where causality rules absolutely. But *causality* now means not a *force*, but an *order* of events. It has become a descriptive rather than an explanatory term. To say that causality rules the physical world means neither more nor less than that events occur regularly in relation to one another. Certain events always follow certain other events, and with equal regularity precede yet others. The losing of one's "balance" in leaning too far out of a high window is followed regularly by rapid descent towards the earth, and this, in turn, is followed ordinarily by bodily injury. The mechanical problems involved are complex ones, but they may be *described* in scientific terms and to a large extent in mathematical terms. The explanation of *why*, ultimately, these events occur, and why they occur in this succession, we do not possess—for the "force of gravity" is but a name for the fact that, when released, bodies do move towards the earth at a regular rate of motion. Thus, when scientist or philosopher now says that the physical world is causally determined, or that all

events have causes and effects, he only means that nothing happens in nature except in a regular order of relations to what has gone before and what comes after it.

II. KINDS OF CAUSES

Simple sequence, however, is not the only way in which things are related to one another, and it is not to this order of relations alone that the term *cause* has been applied in the past. Recognizing this variety of causal relationships, Aristotle has provided their classic arrangement under four general heads:

(1) *Material Causes*, by which he means "That from which (as immanent material) a thing comes into being," e.g., the bronze of the statue.

(2) *Formal Cause*, or pattern, which, in the case of the statue, would be the image of the statue *in the artist's mind* as he works, or to use Aristotle's example, as "the ratio 2: 1 and number in general are causes of the octave."

(3) *Efficient or Moving Cause*, or "That from which the change or the freedom from change first begins, e.g., the adviser is a cause of the action, and the father a cause of the child, and in general the maker a cause of the thing made."

(4) *Final Cause*, or the purpose for whatever change the cause brings about. The final cause is thus described as "The *end*, i.e., that for which a thing is, e.g., health is the cause of walking."¹

These, Aristotle believes, are practically all of the senses in which *cause* is spoken of. Since the same thing may have a material and a pattern and be produced by action and have a purpose, it follows that the same thing may have several kinds of causes. Thus, the material cause of a statue may be a slab of marble; its formal cause may be the artist's idea of Apollo, Minerva, Napoleon, or Abraham Lincoln; its efficient cause will be the actual work with chisel and mallet; the final cause may be fame desired by the artist,

¹ Cf. Aristotle, *Metaphysics*, 1073^a 24-1074^a 25. Quotations are from the translation by W. D. Ross, Oxford Press.

or his joy in creative work, or his remuneration, or a city's desire to honor a hero, or to adorn its park.

III. MILL'S METHODS FOR DETERMINING CAUSES

If we are to employ causes, or regular successions of events, as a means for actual prediction and control in practical life, or as a means to scientific explanation, it is highly important that we should discover quite accurately just what the order of succession is. This task is made difficult in many cases by the fact that objects and events are complex, and involve a number of contributing causes, and relations which look as if they might be causal. In such cases, we must seek to discover which is the real cause of the event, or of the aspect of it in which we are interested. The British logician, John Stuart Mill, formulated certain *methods* by which the real cause of anything or its actual effects might be singled out. These methods he states in the form of five *canons*, but he regarded them all as forms or combinations of two general methods. "The simplest and most obvious modes of singling out from among the circumstances which precede or follow a phenomenon, those with which it is really connected by an invariable law, are two in number," he wrote. "One is, by comparing together different instances in which the phenomenon occurs. The other is, by comparing instances in which the phenomenon does occur, with instances in other respects similar, in which it does not. These two methods may be respectively denominated, the Method of Agreement and the Method of Difference."¹

I. Method of Agreement.

If we are interested in finding precisely what is the cause of some phenomenon, we naturally seek to take into consideration a number of instances where it occurs. We examine each of these situations, with the aim of detecting what is in them which must be present if the phenomenon is to occur. In many respects these situations may differ, cer-

¹ J. S. Mill, *A System of Logic*, Book III, Chapter VIII.

tain factors being present in one which are absent in another. But since the phenomenon which we are investigating occurs in all, it is obvious that any factor which it may require as a cause, must invariably be present. If the instances considered are few in number, it may be that several factors may be present in all. Some of these may have nothing to do with the phenomenon we are interested in, but at least we may be sure that its cause will be found among those which are present *wherever it appears*. "Whatever circumstance can be excluded, without prejudice to the phenomenon, or can be absent notwithstanding its presence, is not connected with it in the way of causation. The casual circumstances being thus eliminated, if only one (circumstance common to all) remains, that one is the cause which we are in search of; if more than one, they either are or contain among them the cause."¹ If we designate by letters of the alphabet, various circumstances which are present when the phenomenon occurs, the cause of which we wish to find, we may imagine one instance in which circumstances A, B, and C are present; another where B, C, and D are present; a third in which C, D, and E appear. The only circumstance common to all three situations is C. Since the phenomenon occurs in all, C must be its cause.

2. Method of Difference.

In employing the Method of Agreement, effort, then, is made to discover some circumstance which is present whenever the phenomenon under investigation occurs. But it is possible also to use a contrary method, seeking out *some one point of difference in situations where the phenomenon does and where it does not occur*. This we constantly do in determining causes in ordinary life. For example, "When a man is shot through the heart, it is by this method," Mill points out, that "we know that it was the gunshot which killed him:

¹ *Ibid.* Mill states the *First Canon* as follows: "If two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all the instances agree is the cause (or effect) of the given phenomenon."

for he was in the fullness of life immediately before, all circumstances being the same, except the wound." That is, "Instead of comparing different instances of a phenomenon to discover in what they agree, this method compares an instance of its occurrence with an instance of its non-occurrence, to discover in what they differ."¹ If the phenomenon in which we are interested occurs when circumstances A, B, and C are present, but does not occur when only A and B are present, we may conclude that C is its cause, or at least a necessary part of its cause.

3. Joint Method of Agreement and Difference.

Both methods which have been mentioned attempt to discover the real cause of things by the *elimination* of attendant circumstances which are not essential. Thus "The Method of Agreement stands on the ground that whatever can be eliminated, is not connected with the phenomenon by any law. The Method of Difference has for its foundation, that whatever can not be eliminated, is connected with the phenomenon by a law" (Mill). Now it frequently happens that by the use of either method alone, definite conclusions cannot be reached. In such cases, both methods are employed jointly. For example, in two instances where the phenomenon under consideration appears, the circumstances A, B, C, D, E may be present in one instance, and C, D, E, F may be present in the other. Both instances agree in having circumstances C, D, and E in common—which, then, is the cause of the phenomenon? If we apply to this same problem the Method of Difference as well as of Agreement, we may find some third instance where D and E occur but the phenomenon does not. We may conclude, then, that C, which is absent in the last case, is the cause, or at least a necessary part of the cause. For example, in the instance of

¹ *Ibid.* Mill states the *Second Canon* as follows: "If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former; the circumstance in which alone the two instances differ is the effect, or the cause, or an indispensable part of the cause, of the phenomenon."

an epidemic of typhoid fever in a college community, it may be noted that the sickness appears in five fraternity houses. All use the city water system, the same dairy, but purchase their fresh vegetables from different sources. By the Joint Method of Agreement and Difference, physicians may eliminate both water and vegetables as the source of the disease. The water used in these fraternity houses is from *the same* supply as that used where no cases of sickness occurred, and on the other hand, the vegetables used where sickness did occur were from *different* dealers and gardens. But it is found that not only do all of the houses where sickness has occurred use milk from the same dairy, but also that no other houses use this milk. If other possible sources of the infection have been eliminated, it will be concluded that the cause is to be found in the milk.¹

4. Method of Residues.-

This, perhaps, is the simplest of all the methods. It consists of eliminating in a situation all the circumstances which are already known to be causes and effects of one another, thus leaving, ideally at least, a single cause the effect of which was not known, and a single effect whose cause was not known. These then are regarded as cause and effect of one another. Thus, from earlier experience, we may know that A is the cause of V, B is the cause of W, C is the cause of X, and D is the cause of Y. We may find in a situation causal circumstances A, B, C, D, and E, followed by effects V, W, X, Y, and Z. By removing known relations of cause and effect, we have left the cause E and the effect Z. E, therefore, is the sole cause, or an indispensable part of the cause of Z. For example, Mill says, "Those who assert . . . that there is in one human individual, one sex, or one race of mankind over another, an inherent and inexplicable

¹ *Ibid.* The *Third Canon* is stated: "If two or more instances in which the phenomenon occurs have only one circumstance in common, while two or more instances in which it does not occur have nothing in common save the absence of that circumstance, the circumstance in which alone the two sets of instances differ is the effect or the cause, or an indispensable part of the cause, of the phenomenon."

superiority in mental faculties, could only substantiate their proposition by subtracting from the differences of intellect which we in fact see, all that can be traced by known laws either to the ascertained differences of physical organization, or to the differences which have existed in the outward circumstances in which the subjects of the comparison have hitherto been placed. What these causes might fail to account for would constitute a residual phenomenon, which and which alone would be evidence of an ulterior original distinction, and the measure of its amount.”¹

5. Method of Concomitant Variations.

We frequently wish to learn the causes, not only of things coming into being, or ceasing to be, but also of their changes. For example, we may find that heat is accompanied by expansion or other changes in certain bodies. And it is for the purpose of explaining such changes that the Method of Concomitant Variations is especially useful. It is based on the principle that whenever we find a variation occurring in one phenomenon in correspondence with a variation in some other, the two are causally related.² For example, “Let us now suppose the question to be, what influence the moon exerts on the surface of the earth. We cannot try an experiment in the absence of the moon, so as to observe what terrestrial phenomena her annihilation would put an end to; but when we find that all the variations in the *position* of the moon are followed by corresponding variations in the time and place of high water (*i.e.*, tides), the place being always either the part of the earth which is nearest to, or that which

¹ *Ibid.*, Chapter IX. Numerous illustrations of each of the Methods will be found in this chapter.

In the preceding chapter, the *Fourth Canon* is stated as follows: “Subduct from any phenomenon such part as is known by previous inductions to be the effect of certain antecedents, and the residue of the phenomenon is the effect of the remaining antecedents.”

² *Ibid.* The *Fifth Canon* states that: “Whatever phenomenon varies in any manner whenever another phenomenon varies in some particular manner, is either a cause or an effect of that phenomenon, or is connected with it through some fact of causation.”

is most remote from the moon, we have ample evidence that the moon is, wholly or partially, the cause which determines the tides."

These methods, Mill concludes, "with such assistance as can be obtained from Deduction (or reasoning from known general principles), compose the available resources of the human mind for ascertaining the laws of succession of phenomena."

IV. NATURAL LAW AND THE UNIFORMITY OF NATURE

The term *law* in civil life is employed with reference to a prescription or command of some superior power. The *law* of which the sciences speak involves no such command; the term here is used merely as a *descriptive* one. *The laws of nature are simply observed regularities in the order of the physical world.* So frequently are these two meanings confused that we may well regret that the one word, *law*, is used for both.

A further confusion has arisen in the use of the term *law* with reference to nature. On the one hand, it has been used to signify a certain regularity of behavior supposed to exist as *an order in the physical world itself*. On the other, it has been employed with reference to those *principles and formulæ by which men describe the sequence of things as they experience them*. The confusion is a very old one. Thus the Stoics sought to bring together, (1) the order or Reason which rules the universe, (2) the same reason as it guides human thought, and (3) the civil and moral rules of society. All were called by the name of *law*. There is consistent order in the world, hence they said, Reason directs and commands nature. Since man possesses reason, this, too, must be an expression of the commanding power in nature. Hence Reason the law of all nature, should be the law of man's thought and of his actions, for it is always better to do the reasonable than the unreasonable act.¹ The Roman jurists refer to civil law and

¹ For discussion of the meanings of *law*, cf. Karl Pearson, *The Grammar of Science*, Chapter III. Published by A. and C. Black, London, 1892, 1900.

the law of nature as existing side by side—animals as well as men were supposed to possess some knowledge of the latter.

Today, *natural law* means to the scientist no more than the formulation of a principle expressing a regular relationship which has been widely observed and nowhere found to be contradicted. Scientific law is thus essentially a product of analysis. Further facts may show that the formulation is inadequate or even false, and that it must be replaced. A scientific *hypothesis* regarding nature is a conclusion which must be verified by further investigation before it may be accepted as true. And a scientific *law* differs from an hypothesis only in that there has been sufficient verification to lead the scientist to regard it as true. But to regard a *law* in this manner does not require that one deny the possibility that future inquiry may prove it inadequate or false. In that case, the *law* will be abandoned as freely as would the newest hypothesis. For the scientist agrees with Sir John Herschel's statement: "The grand, and indeed only, character of truth is its capability of enduring the test of universal experience, and coming unchanged out of every possible form of fair discussion."

It must not be forgotten that whatever order may exist in nature can be known by us only in terms of our abilities to perceive and to reflect. If we have numerous experiences of the physical world, these must be limited to those aspects which our powers give us the capacity to perceive. If we combine these experiences in our thinking, and recognize certain regularities present in them which we may express in terms of *laws*, this must be accomplished by means of our ways of thinking. Since human beings possess similar powers of perception and thought, their results may be similar, and they may agree rather fully on the nature of the external world *as they experience it*. But is this an accurate picture of the real world? Does it follow that such a writer as Pearson is justified in the following view: "The 'universality' of natural law, the 'absolute validity' of the scientific method, depends on the resemblance between the perspec-

tive and reflective faculties of one human mind and those of a second. Human minds are, within limits, all receiving and sifting machines of one type. They accept only particular classes of sense-impressions—being like automatic sweet-meat-boxes which if well constructed refuse to act for any coin but a penny—and having received their material they arrange and analyze it, provided they are in working order, in practically the same manner. If they do not arrange and analyze it in this manner, we say that the mind is disordered, the reason wanting, the person mad. The sense-impressions of a madman may be as much reality for him as our sense-impressions are for us, but his mind does not sift them in the normal human fashion, and for him, therefore, our laws of nature are without meaning.”¹ Is it true of our physical laws of nature as Kronecker believed it to be of the formulations of pure mathematics, that “God made the integers, all else is the work of man”? However this may be, at least it is important to recognize that a *law of nature* can be no more for a human being than a *principle of explanation formulated on the basis of observed regularities in the world, as he and men like him experience it*. Perhaps this regularity does exist only in his way of experiencing things—if it should be so, at least it is the best guide that he has, and in fact, it has proven itself a most useful guide, so useful indeed that it is difficult to doubt altogether its reliability as an indication of the real nature of things. Scientific thought proceeds upon its basis, seeking ever more general laws of nature to explain more specific and local ones, and believing with complete confidence in the ultimate uniformity of nature.

By the *uniformity of nature* is meant in general that throughout the world events occur in an unfailingly orderly relation to one another.² There are no jumps, no chance,

¹ Karl Pearson, *The Grammar of Science*, p. 101. Published by A. and C. Black, London, 1892, 1900.

² “By the Uniformity of Nature we commonly mean the recurrence of similar routine in like fields of relatedness.” Lloyd Morgan, *The Emergence of Novelty*, p. 45. Published by Williams and Northgate, London, 1933.

no events which are not related in a regular way to what went before and to what will come after. It is only upon this assumption that any scientific law may be formulated. Indeed, it is only in so far as such uniformity exists that there is any place or value, not only for scientific thought, but also for any purposeful action whatsoever. If one could have no idea of what would follow as effects of his actions, of course he could never know how to act. But one cannot know what will follow by direct experience, for he must act before the result occurs. If he reason as to what *will* happen on the basis of past experience and the experience of others, he must assume uniformity in nature, which will give at least the probability that under the same conditions, the same results will follow in the future as in the past. When we say that he must *assume* such uniformity we imply that he cannot know with certainty that the uniformity is real. In the past we have learned from experience that thunder follows lightning, that the sun "rises" every morning, that spring and summer follow winter, that growth normally follows birth, that suffocation and death follow absence of oxygen, and so on through multitudinous relations of similarly regular connections. But from such experiences, we learn only that general regularity *has existed in the past*; we do not learn with *certainty* that it must be so, or that it will continue to be so, in the future—of this there is only *probability* based on the assumption that uniformity is a fundamental characteristic of nature. I cannot *know* that the sun will "rise" tomorrow morning, simply because it has "risen" on a great many mornings in the past. Furthermore, many regularities are commonly assumed to be universal merely on the ground that they *usually* appear in experience, though there may be exceptions. For example, we usually hear thunder after seeing lightning, but this is not always so.

When we see lightning and hear no thunder, as Russell suggests, we again *assume* that this is so because the lightning was too far away—the sound of the thunder did not travel far enough to reach us. But this assumption itself is

based on the *theory* that thunder *always* follows lightning, and cannot be used also to prove that theory. Though both ordinary experience and scientific inquiry assume rather than prove the uniformity of nature, one important fact has become evident in scientific experience, namely, that "where an observed uniformity fails, some wider uniformity can be found, embracing more circumstances, and subsuming both the successes and the failures of the previous uniformity." Bertrand Russell illustrates this discovery with reference to the general principle that all bodies tend to fall toward the earth when released. "Unsupported bodies in air fall, unless they are balloons or aeroplanes; but the principles of mechanics give uniformities which apply to balloons and aeroplanes just as accurately as to bodies that fall. . . . Thus, the empirical verification of mechanical laws may be admitted, although we must also admit that it is less complete and triumphant than is sometimes supposed."¹

In summary, then, we see that the *laws of nature*, so far as they can be known by men, are principles formulated to express certain regularities observed in experiencing the behavior of things. Natural laws are not "forces" and they possess no power of command, but they describe the principles of order which have been recognized. The *uniformity of nature* is a necessary assumption for scientific thought and for every-day living, but it is *a product of reasoning about experience*, not a fact which can be directly observed in the external world. The principle which states that *every event in nature has a cause* has been formulated in the light of past experience. If by it is meant that *every event, future as well as past, must have a cause*—this can be based only on inductive reasoning. This reasoning would proceed somewhat as follows: We find in experience that, in many instances, certain kinds of things are associated with (or precede or follow) certain other things. *Probably* nature will always

¹ Bertrand Russell, *Our Knowledge of the External World*, p. 236. Published by W. W. Norton and Company, New York, 1929.

and everywhere display the same forms of organization as it has done in the memory of mankind. Therefore these relationships which we have observed between things may safely be assumed to be *universal* relationships of cause and effect.

V. DETERMINISM IN NATURE

The uniformity of nature has to do primarily with three relationships supposed to exist between things: (1) their relation in space, (2) their numerical relation, (3) their causal relation. All bodies are thought to exist in space and to have spatial relations to all other bodies. All bodies are thought to be related to one another numerically—each counts as one within a group. Finally, all things are thought to depend upon some antecedent things, or, in other words, to have causes. Of these forms of uniformity, the last has received a major share of attention, for on it all purposeful action directly depends, as we have seen. While the idea of determinism in nature involves all three, it is the last especially with which it has to do.

If all things are expressive of causal laws, does this not determine the kind of things they are to be? Must not the *world as it is* at any particular time be *what it is* because of circumstances which existed at earlier times? Is there any chance for something new and unpredictable to happen, or is all surprise due merely to our ignorance and hence our inability to foresee what inevitably must come into being? To answer this question with respect to the world of physical nature, we must differentiate between two ideas which frequently are confused. One of these presents a world of nature, the activities of which possess a mechanical regularity that can be known and predicted. We may know the rate, for example, at which a body will fall towards the earth, or move down a given inclined plane, or the properties of a compound which will result if chemicals are put together. That all physical bodies act in accordance with general laws, no one doubts. But there is another idea frequently

must about the matter—no metaphysical halo of necessity. If, then, determinism implies a *necessary* sequence of natural events, it falls outside the purview of empirical science.”¹ If certain types of experience should refuse to follow the lines which they mark out, other principles of explanation may need to be sought. Since the laws are not commands to nature, but only descriptions, we may well expect to find that a diversity of such descriptions will need to be as great as the diversity of types or kinds of experience. What is meant by this may be suggested by saying that in living processes of organisms and in the mental life of human beings, we seem to find something distinctly different from the relations of chemical elements and physical motions. It need not surprise us unduly, therefore, should we find also that some new order of causal sequence exists and somewhat different descriptive laws are required here, than in explanations of inorganic relations. If we consider, first, the relations of organisms, it is to find that a new principle of causal explanation is invoked, designated by the broad term *evolution*. It is true that having been developed as a means of explanation in the organic realm, the principle of evolution has been carried over into the inorganic, to assist in accounting for a general process of development to which merely mechanical explanation has proven inadequate.² However, it is primarily in its significance for the human organism that we are concerned with it here.

VI. EVOLUTION, EMERGENCE, AND CAUSALITY

It will be generally agreed that physics and chemistry might exist as sciences without biology, but that biology

¹ C. Lloyd Morgan, *The Emergence of Novelty*, p. 45. Published by Williams and Northgate, London, 1933.

² Three general types of inorganic evolution are found in: (a) Geologic evolution, having to do with transformations in the history of the earth. (b) Astral evolution, having to do with the development of our planetary system and of the various heavenly bodies. (c) Atomic evolution, having to do with the development of the order of atoms and molecules.

For a brief description of these forms, cf. G. W. Cunningham, *Problems of Philosophy*, Chapter XIII.

could not exist without physics and chemistry. This is because the problems of physics and chemistry have to do, in most cases, with relationships which do not involve the peculiar form of activity called *life*, while biology, in its study of living organisms, finds what appear to be two types of relationships: on the one side, chemical and physical, on the other, in addition to these, what we may call *vital relations*. The latter are peculiar to an *organism* and in some way seem to arise from its unique structure. Within an animal body, for example, chemical reactions occur just as they might in any other combination of chemical elements. The same chemical laws apply, and chemical reactions occur with the same mechanical precision. Likewise, the animal body is subject to the same physical laws as other bodies. It will "fall" at the same rate of motion and collide with other physical bodies in space in precisely the same way. But beyond these physical and chemical laws, there appear to be other and distinctive characteristics and relationships which they do not fully explain. As most important of these peculiar or *higher* powers of the organism are usually mentioned reproduction of its kind, growth, and adaptation. By means of the last, the organism has the capacity to alter itself (within limits) in order to secure harmony with the conditions of its environment and also (within limits) to overcome injuries to itself which discordant elements in its environment may have inflicted. Thus it may have the power of recovering from illness and frequently, of healing its own wounds. Through its power of reproduction, it may not only produce more organisms of its kind, but through mating on the basis of preference, it possesses the capacity of "causing" new combinations in the characteristics of its offspring. Some would hold that organisms arose originally from altogether mechanical relationships—perhaps between certain chemical elements. They point out that because of time required or some other peculiar circumstance which was present when this chemical or physical interaction gave birth to life on the earth, the necessary conditions may never

again have happened to concur; hence now we do not find new life coming into being except from the one source of reproduction. Such an explanation may be criticized on several grounds, but it will be sufficient for our present purpose to note merely that the view, though it has not been disproven, is yet without evidence in its support—science and philosophy simply do not know what may have been the origin of life. What we do have good evidence for believing is that, whatever its origin, organic life has *developed* in ways which purely mechanistic principles cannot explain. This fact the early evolutionists did not clearly comprehend. Instead of recognizing the full significance of their new principle of explanation, they frequently lost sight of its uniqueness and endeavored to link it with Newtonian physics. Thus Huxley wrote: “The elements of living matter are identical with those of mineral bodies; and the fundamental laws of matter and motion apply as much to living matter as to mineral matter; but every living body is, as it were, a complicated piece of mechanism which ‘goes’ or lives only under certain conditions.” It is fair to say that the doctrine of natural selection, as first enunciated by Darwin, relied in no small measure on this same mechanical form of explanation.

In later biological speculation, two theories have arisen at this point. One, that of the *mechanists*, holds that there is nothing mysterious in the origin or nature of life. Life arose in the natural course of events, and from purely natural and mechanical causes. Biology has found a mechanical explanation for many of the life-processes formerly supposed to be of some other and mysterious kind. It need but continue its inquiries, it is held, to discover that *all* of the characteristics of the living organism may be explained in a similar way. The opposed theory is that of the *vitalists*, who point out numerous ways in which the organism differs from inorganic entities. The organism is a *whole*, and seeks to direct its various parts in the service of that whole. This has been illustrated in even so low a form as the amœba,

which moves toward food or away from a harmful substance. Even here there seems to be some dull dawning of a sense of action with the purpose of serving the future welfare of the entire organism. Further, there is an element of indeterminacy in the actions of the organism. Who can say how an ant will proceed on coming to a stick in its path, or which direction a bird will take when it starts to fly, or which flower in a garden a bee will *choose* to light upon? From such data, and, in addition, the apparent freedom of the human will, the vitalist concludes that the organism possesses some kind of inner self-directing nature, some non-mechanical force or factor, some willing, purposing energy or spirit.¹

The controversy between mechanists and vitalists continues to be hotly waged, with the vitalists at present probably outnumbered if not outfought. Into this biological battle it is not necessary that we should enter farther than to suggest that the weakness on the side of the mechanists lies in their failure to account for differences which are actually observable in the structure and activities of organisms and of inorganic bodies. The weakness of the vitalists' case is to be found in the necessity which they face of introducing some alien and unobservable *spirit* or *psychic-force* or *vital energy*, to explain what the mechanist leaves out of account. The mechanist offers an inadequate explanation; the vitalist an adequate one if there were but some grounds for believing it represented anything actually real in nature.

A more satisfactory approach seems to be one which accepts the mechanists' contention that so far as chemical and physical relations are concerned in the life of the organism, the laws of chemical and physical causality hold, and hold absolutely. But while agreeing thus far with mechanism, a satisfactory account must do more for us than the mechanist can do on his principles. It must provide a way

¹ Compare, for example, the two positions as suggested in Loeb's *The Mechanistic Conception of Life* or his *The Organism as a Whole*, with the vitalistic view presented in McDougall's *Body and Mind* and Driesch's *Science and Philosophy of the Organism*. Cf. also Bergson's *Creative Evolution*, in which this life-force is the *élan vital* or vital energy.

of explaining those unique characteristics which belong to the organism, *as organism*; characteristics, that is, over and above those belonging to its nature as a chemical and physical body. This is accomplished by introducing *purpose*, if purpose be understood in a very broad sense. In this sense, purpose does not imply conscious will, or a force of any nature alien to the body. It is rather to be thought of as a *design in nature*, and a design with some *value* attached to it. The recognition of *value* as something determinative in the life of the organism, permits us, as Professor Hoernlé has said, "to read relations of *cause* and *effect* as also relations of *means to ends*." In other words, in the case of inorganic causal laws, the direction of the relation is always from the past towards the future. A body is accounted for entirely in terms of what has gone before. But in the case of an organism, we find the causal relation extending in *both directions*.

On the side of its nature as a physical and chemical body, an organism, like inorganic bodies, depends upon what has gone before. Its peculiar nature as an *organism*, however, reveals the fact that its "causes" lie not only in its antecedents, but also in *ends* which are yet to be realized. Certainly in the case of human beings, hope, ambition, anticipation are potent causes of action. That which is hoped, or desired, or feared, as we well know, causes many of our present actions, and has a large part in determining what kind of people we are. To hope or desire or fear something in the future, of course, involves *conscious* thought and purpose. But below the human level of intelligence, unreasoned and even unconscious though they may be, there yet exist innumerable examples of activities causally related to the future as well as the past. The "struggle for survival," the elements of discrimination which enter as vague feelings into the selection of a mate, the struggle for food—these may be called "instinctive" if we choose, but that is not to alter the situation. Instinctive though they be, they yet represent causes of action which have reference to an end. Their presence may be attributed to the survival of those organ-

isms which developed these particularly helpful instinctive tendencies, but this again in no way alters but rather emphasizes the fact that *values do actually lie in certain powers and ways of living* and organisms are peculiar in their capacity to be determined by these values.

It is a surprising paradox, when one thinks of it, that anyone should have chosen *machines* to stand for organization *without purpose*, or should have compared themselves and other organisms to machines in order to emphasize the idea that organic life developed without purpose and value. For is anything in the world more dependent upon purpose than a machine? It was fashioned to serve some need of man, and it is operated by man in the service of that end.¹ Needless to say, this is not an argument against the purely mechanistic position, but it does suggest that the analogy on which mechanistic explanation proceeds is a poor one. Indeed, it suggests the further question of whether anywhere in the entire range of human experience we meet with a totally meaningless and purposeless type of causal relation —such as that on which the mechanist insists that we base our explanation of organism and mind!

At present, the tendency in scientific explanation is not only against any attempt to explain *all* things in terms solely of mechanism, but on the contrary, it is increasingly in the direction of explaining all things and the world itself in organic terms. Mechanistic explanation is closely affiliated, if not inseparable, from physical assumptions about the world which are now outstripped and left well in the past. Even the atom is no longer regarded as it formerly was, but in a way which is striking in its resemblances to the structure of organisms. Many scientists would now agree with J. S. Haldane when he says: "In the case of what we call organic phenomena we can see from the outset that mechanical interpretations are impossible. In the case of what we call inorganic phenomena, on the other hand, we can at present

¹ Cf. R. F. A. Hoernlé, *Studies in Contemporary Metaphysics*, p. 161. Published by Harcourt, Brace and Company, 1920.

see only by dint of careful quantitative experiments that mechanical interpretations are ultimately not sufficient, though in ordinary cases mechanical interpretations are extremely useful and trustworthy for purposes of prediction, and can be applied without difficulty. The conception of reality or Nature to which we are directly led by the study of life is very different from that to which, except on very exact and deep study (*i.e.*, sufficiently penetrating to get beyond purely mechanistic explanation), the isolated consideration of what we distinguish as inorganic phenomena leads us.”¹

The recognition that mechanistic explanation is inadequate to the study of organisms, and possibly even to a final account of the inorganic world, is of basic significance to the meaning of *evolution*. Evolution may be regarded, of course, as simply a form of biological classification and description. But if we think of it as in some way accounting for the order of the real world of nature, that is, if we think of it as a *causal* order, we must ask how it pictures the relationship of causes and effects. In answer to this, the earlier champions of the theory attempted frequently, as we have seen, to link it with mechanism, for they were familiar with this type of explanation in the physics of their day. The task was necessarily doomed to failure, for mechanism never can account for any genuine *novelty* in the product. There can be rearrangement, but never more in the product than in the antecedent situation from which it comes. Now evolution recognizes that in actual experience there may be more and there may be new characteristics. Life, whatever it may come from, undeniably is more in fact and in our experience of it than may be found in any inorganic combination. The living organism manifests powers and characteristics which are not to be discovered in the whole length and breadth of the “inorganic” realm. And similarly mind, with its concern for meanings, interests, and values, undeniably is more and different from mere “organic” activity. The *material* of the

¹ J. S. Haldane, *The Sciences and Philosophy*, pp. 18–19 (Gifford Lectures, 1927–1928). Published by Hodder and Stoughton, London, 1929.

organism may be the same as that of an inorganic body, and the activities of thought may depend upon bodily activities—of glands, nerves, etc.,—of the physical organism. But in each case a new form has arisen, and this new form or *structure* presents every evidence of being something genuinely novel in nature. If science is to deal with reality as it finds it, and not with preconceived theories of its own, it must recognize these novel forms—it cannot dismiss them by merely trying to reduce them to something else, or explain them away altogether. It therefore must use some kind of explanation which *can* take novelty into account. Since a purely mechanistic one *cannot* do this, it must find another to supplement or to supplant it.

Having given up the effort to account for the stages of development in the evolutionary process by purely mechanistic means, three possible courses are open to the philosopher and scientist. (1) He may introduce an outside Cause, a God or gods (as Wallace did) to account for the occurrence of new forms. (2) He may give up the problem of causality altogether, and regard the evolutionary account merely as a descriptive picture of the actual course of natural development. *Why* the development has actually taken place and *why* it has taken place in this way, he may decline to speculate. (3) He may regard the coming of new forms as due to a principle as deeply rooted in nature as causal regularity itself, namely, the principle of *emergence*. That is, he may hold it to be a fundamental characteristic of nature to produce the unexpected and unpredictable. Some mention, though brief, must be made of this last position.

As stated by one of its most eminent advocates, the British philosopher, C. Lloyd Morgan, the *Emergent Hypothesis* holds that "In the course of advance along the whole evolutionary curve, there has again and again been original novelty which could not have been predicted before its advent on the evolutionary scene."¹ The conception seems to owe its

¹ C. Lloyd Morgan, *The Emergence of Novelty*, p. 61. Published by Williams and Northgate, London, 1933.

origin to the recognition that in chemistry, *new forms of being* with new qualities *emerge* when certain chemical elements which do not show these qualities are put together. G. H. Lewes once suggested that the outcome of physical processes should be called *resultants*, while the outcome of chemical processes should be designated *emergents*. For an example of the latter, when two atoms of hydrogen are joined with one of oxygen, the result is water, which has qualities evident neither in the hydrogen nor the oxygen. They seem, therefore, to be products of neither, but rather products of the union itself. As a general principle this might be stated as follows: Physical entities possess certain characteristics in isolation, but they may possess *other* characteristics (or activities) in combinations. Since we know physical things by their characteristics, we may even say that they become different things in combination than they were when alone.

If this principle of emergence is given a wider application, as scientific thought now allows that it may be, it is possible for it to be extended not only downwards from the chemical molecule to the atom, but also, upwards to life and mind. Life, then, becomes a new fact in the universe when a particular physical and chemical combination is achieved. This does not mean, for the emergent theory, that life is *nothing but* its chemical foundation. Life is a genuinely new form which is achieved in nature at a certain point where satisfactory conditions occur. The theory neither requires nor denies the existence of God.¹ It is descriptive rather than explanatory in any ultimate sense. As a chemical account of water can go no farther than recognize that water *does* appear when hydrogen and oxygen meet, so biology can go no farther than to say, similarly, that under certain conditions, life *did* appear—*why*, it does not know. And psychology can say that at a certain point in organic

¹ Cf. Lloyd Morgan, *Life, Mind, and Spirit*, Lecture X (Gifford Lectures). Published by Henry Holt and Company, New York, 1926.

Professor Morgan maintains that: "Life and mind are manifestations of Divine Purpose, one and indivisible in God as ultimate substance" (p. 31).

development "mental" activities do arise. They are something new in nature. Causally they are related to the state of the organism, as their necessary antecedent condition, but they are not *caused* by that state or its factors in any mechanical way. They represent a novelty which could not have been predicted by looking merely at the organism. They present a new order of relations in its activities.¹

¹ For literature, cf. bibliography at the end of the book.

CHAPTER XIII

CAUSALITY AND MIND

I. THE RELATION OF BODY AND MIND

For practical purposes, it may be satisfactory to regard the physical world as operating quite mechanically. Indeed, if we are to be able to depend upon the results of our actions being what we can anticipate, we must be able to rely upon a regularity in the behavior of things which at least approaches uniformity. We do not desire that our automobiles should display unpredictable novelty in their behavior each time we start their motors! Nor do we even desire that our own physical organism should react in novel ways each time we breathe or swallow a morsel of food. In these lower realms of inorganic and organic relations, the mechanical explanation serves us well, except with regard to those major variations (*e.g.*, evolution of living organisms), where, as we have seen, its inadequacy destroys its usefulness. In the case of mental relations, this is not the case. Here, both experience and action seem to demand a different type of relationship, namely, one which allows us to be *free agents*, thinking and acting in ways which are not mechanically determined.

"So far as physical nature goes," writes William James, "few of us experience any temptation to postulate real novelty. The notion of eternal elements and their mixtures serves us in so many ways, that we adopt unhesitatingly the theory that primordial being is inalterable in its attributes as well as in its quantity. . . . It is when we come to human lives that our point of view changes. It is hard to imagine that 'really' our own subjective experiences are only molecular arrangements, even though the molecules be conceived as being of a psychic kind. A material fact may indeed be different from what we feel it to be, but what

sense is there in saying that a feeling, which has no other nature than to be felt, is not *as it is felt?*¹ No one may care to question the fact that activities of "thought" and "will" can only occur if certain activities of purely physical character also occur in a bodily organism. Without the activities of nerves and glands, our *mental* life would cease. What we commonly speak of as *remembering*, *reasoning*, *imagining*, *willing*, and like activities, certainly do not exist independently of any conditions. The psychologist may be altogether justified in maintaining as a general principle of inquiry in his field that "*No mental modification ever occurs which is not accompanied or followed by a bodily change.*"² These bodily relationships constitute conditions within which occur mental modifications—which we may experience as *memory*, *feeling*, *emotion*, *will*, or *thought*. But in what sense should they be regarded as *causal* conditions? In what sense, if any, may we say that bodily activities *cause* mental activities? What light has psychological study to shed upon this problem?

The progress of psychology in modern times has been associated rather closely with that of the natural sciences, though psychology itself, until quite recently, was not regarded as independent, but as a branch of philosophy. It has now firmly established itself as an independent science, having as its province those aspects of human and animal behavior which seem to be susceptible to exact scientific measurement and description. The task of interpreting the *significance* of psychological data from the point of view of their *meaning and value for human living, and in relation to man's life as a whole*, remains for *philosophy* to undertake. While psychology remained a branch of philosophy, perhaps the problem which received its most persistent attention was that of the relation of mind to body. Since the problem had to do with the nature of bodies, it could scarcely

¹ William James, *Some Problems of Philosophy*, pp. 150-151. Quoted by permission of the publishers, Longmans, Green and Company, New York, 1911.

² William James, *Principles of Psychology*, Vol. I, p. 5. Henry Holt and Company, New York, 1890, 1918.

be treated in isolation from the views then current in the sciences, as to what that nature may be. Further, the effort to explain the relationship which connects a body with "its" mind seemed closely related to other relationships which the sciences were investigating. If we look for more specific influences in the history of psychology prior to the present century, three are especially marked: (1) that of physics; (2) that of chemistry; (3) that of biology.

1. Galileo and others pointed out that physical processes in the world of nature may be best described in terms of *motion* and *inertia*. Thus, as we have seen in the case of Leibniz, "force" came to take the place of any material-like substance in things. William Harvey, fourteen years Galileo's junior (born 1578), made a decided advance in the explanation of the activities of the body in *physical terms* when he offered a mechanical explanation to account for the circulation of the blood. Descartes was quick to carry this type of explanation farther, attempting to use it in the explanation of animal and human behavior. When an external force or motion excites the eye or other sense organ of the body, it is able to produce a muscular movement. This, said Descartes, is because a "fluid" is set in motion along the nerves moving from the sense organ to the brain, and back again to the muscles.¹ In man, such reactions differ from those of the animals, thought Descartes, because, in the pineal gland of the human brain is located a *soul*, which, in certain cases, may influence the incoming or outgoing motions. This human soul is different in substance from the physical or material body.² For Hobbes, often

¹ "When I feel a pain in my foot, my knowledge of physics teaches me that this sensation is communicated by means of nerves dispersed through the foot, which, being extended like cords from there to the brain, when they are contracted in the foot, at the same time contract the inmost portions of the brain which is their extremity and place of origin, and then excite a certain movement which nature has established in order to cause the mind to be affected by a sensation of pain represented as existing in the foot." Descartes, *Meditations*, Meditation VI. Cf. also Descartes' *Treatise on Man*.

² In giving a non-physical substance such a *location* in a physical organ, Descartes, of course, is not consistent.

referred to as the "father" of empirical psychology, no less than for Descartes, all mental processes are to be explained as *motions*—though Hobbes himself had little respect for Descartes' work in this field. All is motion in the world of nature and, no less, all is motion in the mind. In the case of sensation, it is not true that the mind merely feels the impact of some motion in the external world. There is a motion directed from within, which moves outward to meet the incoming motion from the external object. The two interact, and the result is the *sensation* which we feel. The "object" perceived in this way seems to be outside, rather than within, the mind, because we are aware of the outward-going motion just before the sensation is experienced. Having once entered the mind, sensations remain in a state of inertia as *ideas*. Motions which closely succeed one another in the senses remain as associated ideas. "Thought is drawn by thought," he says, "as one bit of water on the table, moved by the finger, draws the rest of the water after it." *Action* and *desire* are due to the motions outward, which we find in the body. If the motion is a strong one, the result is action; if weaker, it is felt as desire or aversion. Desires are motions toward the thing desired, while aversion is motion away from it. It is obvious that such an explanation relies heavily upon the general point of view of Newtonian physics.

2. Early in the last century, the extraordinary advance of chemistry led to a new mode of psychological explanation. Why should there not be a "mental chemistry" which would explain ideas and their interrelations in terms analogous to those of chemical elements and compounds? If water seems a single simple thing, though in fact it is a compound, may we not explain in similar terms the unified ideas which we have of objects, including as they do sensations of color, flavor, warmth, hardness, etc.? With this point of view came the idea that psychological facts, too, might well be subject to laboratory study. This possibility was made the more plausible by the fact that effective laboratory work

was being done in the investigations of physiology, which clearly is closely related to psychology.¹

3. The relationship of psychological to biological study was brought clearly to view in the work of the evolutionists. Following the publication of Darwin's *Origin of Species* in 1859, questions of development and variation necessarily pushed their way to the forefront of scientific thought. Such problems were of vital concern to anyone attempting to explain mental life. The old mechanical mode of explanation would not serve here, and reliance on the concepts of Newtonian physics and of chemistry was superseded by the attempt to approach psychical inquiry rather with the concepts of physiology. The structure of mental life was certainly closer to that of organic life than to the physical order of motion and inertia, or the chemical system of elements and compounds. Heredity and environment, individual and racial differences, animal and child psychology—such subjects as these had come to engage the attention of the psychologist of 1900.

In the present century, psychology has won its right no longer to be looked upon as "mental philosophy" but as a "science," striving precociously, though still in its infancy, for methods of its own which it may suitably apply to its subject-matter. Reliance upon common sense, experience, and introspection has largely given place to more exact, but also more objective, methods of description and measurement. One cannot measure motives, desires, thought processes, or emotions exactly. They therefore are dubious subjects for scientific treatment. But one can measure the stimuli and the active responses which precede and follow mental activities that we designate by such terms. Hence a science of psychology may well confine its attention to these measurable aspects, and this is what psychology has tended to do. When it has done this consistently, it has rendered service of great value. But, as might be expected

¹ Wundt established the first significant psychological laboratory in 1879 at Leipzig.

in so young a science, it has yielded at times to the lure of philosophizing on the basis of insufficient data. And, forgetting that it was dealing only with those aspects of mental life which had been selected because of their adaptability to its type of inquiry, it has sometimes concluded that what those aspects do not include cannot exist. But this form of psycho-philosophical explanation, happily, now has been largely abandoned. In its place has come an attitude more in keeping with modern thought in the other sciences. The seeking of causes, in the older sense of the term, has given place to a recognition that here, as elsewhere in scientific explanation, *cause can mean for us no more than a regular sequence of events.*

Approaching the problem of body and mind from this position, it appears no longer to be a pertinent or scientific question to ask how mind and body "force" one another to do anything. A correlation of some kind between the two appears to exist—ordinary experience and scientific observation seem to establish as much without leaving a basis for serious doubt. But to ask how mind forces body to act, or body forces mind to act, or to think of the two as set apart or over against one another as fundamentally distinct substances, is to lapse into an outworn mode of explanation. We know that certain events of a *physical* nature regularly precede or follow certain other events of a *mental* order. There is no objection to calling this regular succession by the old names of cause and effect, but there are distinct and important objections, in psychology no less than in physics, to understanding by *cause*, so used, any imperative *force*. To suppose such a force in body or mind is to leave the realm of scientific description and enter that of imaginary beings and myths. If I *will* to walk across a campus, and actually do so, there is a correlation between the two activities of thought and physical movement. Experience shows the thought or desire to be followed by the action. I may describe the processes involved in each. But I cannot say ultimately *why* the idea is able to produce the action,

and the belief that some *force* must be the final explanation can neither be justified in fact, nor could such a force really be of any value, since it, too, would then remain to be explained.

II. THEORIES OF THE MIND-BODY RELATION

Psychologists and philosophers are far from agreement as to the nature of the relationship between *body* and *mind*, or, more broadly stated, between *matter* and *mind*. It has been suggested that only seventeen theories are possible with regard to the relation, but of these, not a few may be dismissed at once as highly improbable or inconsistent.¹ Professor C. K. Ogden of Cambridge has selected seven as being of importance to psychology.² From the point of view of philosophy and of our present discussion, this group includes the positions of major interest, and we may do well to note them, even though very briefly.

i. Behaviorism.

The position in psychology known as *Behaviorism* commonly is associated with the name of John B. Watson, formerly of the University of Chicago and Johns Hopkins University. Professor Woodworth justifies this association, saying: "Behaviorism must be, by definition, what he (Watson) teaches—or the essentials of what he teaches—and other psychologists are entitled to be called behaviorists only so far as they agree with him. Inasmuch as nearly every psychologist maintains some independence of thought, the number of pure and unqualified behaviorists is limited; but there are many who follow Watson to a large extent."³ It is unnecessary to quarrel over labels, but less and less does the use of the term *behaviorist* seem to imply such

¹The more advanced reader is referred to C. D. Broad's *Mind and Its Place in Nature*.

²C. K. Ogden, *The Meaning of Psychology*, pp. 20 ff. Published by Harper and Brothers, New York, 1926. The order of topics below is that which Ogden follows.

³R. S. Woodworth, *Contemporary Schools of Psychology*, p. 43. Published by the Ronald Press Company, New York, 1931.

identification with the thought of Watson; certainly it does not mean acceptance of his philosophical conclusions. But it does mean the acceptance of his general psychological *method*—which is the point of strength and importance in the position. Watson was a laboratory experimentalist of high distinction, and the psychological method which he developed was a generalization of the method which he had found valuable in the laboratory.

Behaviorism may be said to have had its rise in 1912. It was then, writes Watson, that the behaviorists “reached the conclusion that they could no longer be content to work with intangibles and unapproachables. They decided either to give up psychology or else make it a natural science.”¹ In 1914, Watson wrote: “Psychology as the behaviorist views it is a purely objective experimental branch of natural science. . . . It is possible to write a psychology, to define it as Pillsbury does (as the ‘science of behavior’), and never go back upon the definition: never to use the terms consciousness, mental state, mind, content, will, imagery, and the like. . . . It can be done in terms of stimulus and response, in terms of habit formation, habit integration, and the like. . . . In the main, the desire in all such work is to gain an accurate knowledge of adjustments and the stimuli calling them forth.”² Viewed in this way, psychology should concern itself exclusively with such facts as are capable of *exact description and measurement*. For this purpose it would be quite useless to introduce such concepts as *mind* or *will*, for these suggest something too general and too elusive for objective quantitative treatment. Thinking itself must be explained in terms of something measurable, and Watson chose to describe it as *sub-vocal talking*—or slight muscular movements in the organs of speech, or (ac-

¹ John Watson, *Behaviorism*, p. 6. Published by the People's Institute Publishing Company, 1924. Cf. also Watson's *Psychology from the Standpoint of a Behaviorist*, the best statement of Watson's position. Published by J. P. Lippincott Company.

² J. B. Watson, *Behavior: An Introduction to Comparative Psychology*. Published by Henry Holt and Company, New York, 1914. Quoted also by Woodworth, *op. cit.*, p. 44, who calls attention to the fact that Chapter I of this book is the original pronouncement of the behavioristic position.

cording to his later development of the theory) elsewhere in the body. "Mental events" simply do not exist, but are an illusion "like the malevolence attributed by the savage to a pistol." We find ourselves in various situations, and we respond to these situations by activities of our glands and muscles, which we call *feeling* or *thinking* or *willing*. The word *mind* is but a popular name for a highly complicated set of neural activities. "As soon as 'mental states' are resolved into reflexes among some of the 10,000,000,000 cortical neurons, it becomes obvious that the word 'mind' is no more than shorthand for neuronal action and interaction when influenced from the outside or by internal stimuli."¹ Stimuli, whether outside or within the body, are answered by certain responses—which are of the nature of bodily movements of some kind. Similar stimuli appear and reappear, and certain habits of response are developed. Precisely what may be the connection between a particular stimulus and its response—or, precisely how a stimulus causes a response, the behaviorist does not tell us. But in many cases he may observe the stimulus and the response, measure their intensity, and describe their character. It is with these describable aspects of psychic life that he is interested, and he may leave the question of the final cause of behavior out of account. If he does this, and if he realizes that his explanation is incomplete, his method is a scientific one, and few will care to quarrel over its significance.

Unfortunately, some have not been content to remain on this scientific level, however, but have attempted to go on to offer a philosophy of the whole of mental life in terms of this mechanistic account. Forsaking their earlier determination to leave the unmeasurable alone, they have invoked now antiquated assumptions of physics to account for psychic life on the oft-tried assumptions of matter and motion. But it is only fair to say that for the greater part, behaviorists recognize the inconsistency of such procedure. Employed

¹ M. Roberts, *Warfare in the Human Body*, p. 229. Quoted also by Ogden, *The Meaning of Psychology*, p. 22.

legitimately, the method of behaviorism has made extensive contributions to our understanding of psychological facts. Not only has it led to more accurate descriptions of this type of behavior, but it has shown the futility of many of the vague terms which formerly were in common usage, both in psychology and philosophy.

2. Animism and Interactionism.

In direct opposition to the behaviorists stand the *animists*, who, as their name implies, maintain the real existence of *anima* or soul, which is different in kind from the physical body, and which interacts with the body. Of this view, William McDougall, is the leading exponent.¹ The view may be true—it has not been proven false, and there is much evidence brought forth both by the skill of Professor McDougall's investigations and by common sense, in its support. Yet psychologists and neurologists for the greater part find the theory unacceptable, mainly for two reasons: (1) There is a lack of direct evidence to support it; the soul, if it exists as something apart from body in its nature, cannot be observed. (2) The phenomena of psychology seem to be scientifically explicable without it. With this second point especially, of course Professor McDougall would not agree. But as we have seen, to be scientifically explicable means to be explainable in *functional* terms—whether any entity such as a soul substance lies *behind* this functioning remains an open question—all that can be held is that the scientist does not need to assume its being in order to achieve the type of explanation in which he is interested.

3. Psychic-neural Parallelism.

Two clocks may keep time in the same way, the hands always maintaining analogous positions on the two faces, not because either clock controls the other, but because they are so constructed that their movements are parallel.

¹ Cf. especially McDougall's *Body and Mind*, and his *Outline of Abnormal Psychology*.

So, it is held by the parallelists, do activities of mind and body parallel one another, though there is no interaction whatsoever between them. Events in the neural system are accompanied by analogous events in the mental. Neither causes the other in the sense of compelling it. This view avoids the logical difficulty of accounting for the ability of an event in one order actually to exert an influence, not to mention force, on events in another order different in kind from itself. This has been called the "safest view in psychology," though possibly not the most satisfying. Its attitude toward a causal force is that of simple denial.

4. Double Aspect Hypothesis.

From this point of view, mind and body are both *aspects* of some third and underlying entity. Neither mind nor body may be reduced to the other, and neither is dependent upon the other. They are equally real, but neither is genuinely independent or could exist alone and in its own right—there is something more fundamental than either mental or physical activity. When I think, the result for me is an idea. But could someone else observe the activities which transpire in this thinking process, they would appear to him to be activities of my nervous system. What the *something* may be which these two aspects express is highly obscure and must be, since we can experience only its manifestations in these two forms. And it is precisely this obscurity which condemns the position in the eyes of most psychologists. Can the assumption of an unknown *something* aid us in securing any clear or scientific explanation? May we not secure an equally satisfactory explanation without introducing such an unknowable factor?

5. Epiphenomenalism.

For epiphenomenalism, mind is a kind of "phosphorescent glow" which arises from certain neural processes. It is not just those processes as such, but their by-product. On this theory, the nature of mind has been illustrated by the light

of an arc-lamp, which is produced, not by either carbon alone, but by a current passing from one to the other. The epiphenomenal view usually recognizes that the mind is dependent upon the nerve structure, and can be influenced by it, but the mind, on the contrary, cannot influence the physical body. The latter belongs to a closed physical order of nature where causal laws are absolute. It is thus a compromise between parallelism on the one hand, which regards mind and body as independent, and materialism on the other, which reduces mind to matter in motion. "Naïve materialism is unable to do justice to the fact of consciousness, for it is nonsense to say that the motion of atoms *is* consciousness. Epiphenomenalism is the attempt to occupy a compromise between parallelism and materialism; and, as in all such verbal compromises, it is either parallelism or materialism according to the outlook of the interpreter."¹

6. Neutral Monism.

This position has been championed by Bertrand Russell.² In his view, "It is obvious that a mind must be a group of mental events, since we have rejected the view that it is a single simple entity." Sensations and "mental images" may be reduced to physiological events in the body. Material units, on the other hand, are reducible to sensations, actual and possible. Both mental and physical events arise from a more primary neutral form of being—their differences arise from the laws which they follow. Thus mental events follow psychological, while physical events follow physical, laws.

7. Double Language Hypothesis.

This position regards psychology and neurology as being concerned with the same facts, but as describing them in terms of two different languages. The same event is looked

¹ R. W. Sellars, *The Essentials of Philosophy*, p. 260. Published by The Macmillan Company, New York, 1917.

² Cf. Russell, *Philosophy*, pp. 206 ff., 282 ff.

at from two points of view—the event is thus not an unknowable, but something doubly knowable—that is, knowable in terms of its psychological meaning or relations, and in terms of its physiological meaning or relations. Professor Warren's statement exemplifies this general attitude when he says: "Conscious and neural phenomena constitute one single series of events . . . their different appearance is merely due to different ways of observing them." For him, "Consciousness 'belongs to' the activity of neurons as truly as the intensity or form of neural impulses belongs to this same activity. . . they form part of the 'total description' of nerve activity."¹

Which of these various theories is most acceptable remains a debatable question for the reason that the facts with which they are concerned are in part very obscure, and thus far not enough evidence has been discovered in favor of any one to demonstrate its superiority beyond reasonable doubt. But although the possible theories are numerous, it may have been noticed that they are associated with one another on the basis of certain general tendencies. For example, they may be grouped as those which do or do not recognize the possibility of causal interaction between mind and body; or again, as those which tend to reduce mind and matter to aspects of a single thing, or as those which tend to regard them as fundamentally different and parallel to one another.

If from all of this apparent difference of opinion we seek out common tendencies in the contemporary philosophies of mind, we may note two which are especially significant:

i. The idea of a *mind-stuff* which differs from matter has largely disappeared. This does not mean that mind is reduced to a material nature, however, for a similar process of investigation has destroyed, likewise, the older conceptions of a *material-stuff*.² It does mean that the advancing

¹ H. C. Warren, *Human Psychology*, p. 415. Quoted also by Ogden, *The Meaning of Psychology*, pp. 28-29.

² Cf. William James' discussion of "The Mind-Stuff Theory," in his *Principles of Psychology*, Vol. I, Chapter VI.

thought of investigators has tended to show that some other type of explanation is to be preferred, both for its consistency and usefulness. We know both mind and matter in terms of activities and effects, and since this is the way in which we experience them, it would seem to follow that it should be also the way in which we define them. Mind represents a particular type of activity; body represents what appears to us to be a different type. But how are these two types related to one another? Are both aspects of a single inclusive world system? Is mind but a fuller and higher expression of the order of nature than is matter? Why should we think of nature in terms only of its lower expressions, or feel that we are dignifying mind by removing it altogether from the realm of nature? On the contrary, is it not a preferable course to give nature its due, and to recognize that in it lie the potentialities of all those qualities of reason and genius which we honor; all those characteristics of beauty and moral grandeur to which we thrill; all those elements of generosity and love which we hold dear?

2. A second tendency which appears in contemporary theories of mind is that of giving up the futile pursuit of a causal force which can connect mind and body, giving one control over the other. In place of this, we find increasingly in modern thought the tendency to deal with mind and body as two orders of activity, or, perhaps, two aspects of the same activities, but two orders or aspects which cannot be reduced one to the other. “‘A motion become a feeling!’—no phrase that our lips can frame is so devoid of apprehensible meaning,” exclaims James, who then continues to point out how “even the vaguest of evolutionary enthusiasts, when comparing material with mental facts, have been as forward as any one else to emphasize the ‘chasm’ between the inner and the outer worlds.”¹ “Suppose it to have become quite clear,” wrote Spencer, “that a shock in consciousness and a molecular motion are the subjective and

¹ James, *Principles of Psychology*, Vol. I, pp. 146–147.

objective faces of the same thing; we continue utterly incapable of uniting the two, so as to conceive that reality of which they are the opposite faces.”¹ In similar vein, Tyndall said: “We can trace the development of a nervous system and correlate with it the parallel phenomena of sensation and thought. We see with undoubting certainty that they go hand in hand. But we try to soar into a vacuum the moment we seek to comprehend the connection between them.”² As James freely points out, such statements may not give due weight to certain factors which motions and feelings do have in common, such as intensity, volume, simplicity or complication, smooth or impeded change, rest or agitation. Nevertheless, the two are not the same, and more recent explanations, while they may have added markedly to what we know about the correlations of bodily activities with “mental” feelings, have not in the slightest degree succeeded in showing more than correlation. Certain stimuli are followed by certain responses, and the sequence may become “habitual” or regular—this conclusion we may reach, but we have gone no step farther in the direction of explaining *why* this is so. No less than James, we still may ask ourselves “whether, after all, the ascertainment of a blank unmediated correspondence, term for term, of the succession of states of *consciousness* with the succession of total brain-processes, be not the simplest psycho-physic formula, and the last word of a psychology which contents itself with verifiable laws, and seeks only to be clear, and to avoid unsafe hypotheses.”³

With this general situation before us, we may consider certain more specific views of mind which are accepted by major schools of philosophy. This we shall seek to do briefly in the succeeding chapter, in relation to the closely allied subject of their theories of knowledge. There remains, however, a subject of such profound human interest that

¹ Herbert Spencer, *Psychology*, Section 272.

² Belfast address.

³ James, *Principles of Psychology*, Vol. I, p. 182. Published by Henry Holt and Company, New York, 1890, 1923.

some mention must be made of it—the relation of causality to the freedom of the will.

III. CAUSALITY AND FREEDOM OF THE WILL

Our ability to live as responsible human beings depends upon our ability to choose our ends and courses of action. If our apparent choices are in fact determined, then we could not do otherwise. And if we are obliged to think and act as we do, in what sense may we be held responsible for anything whatsoever? We have seen that we may not logically assert that external physical nature is determined, but we have seen, too, that for purposes of practical action the sequence of events possesses such regularity as to render a mechanistic explanation in ordinary matters highly serviceable. Hence we use the terms *cause* and *effect* in describing natural processes, merely remembering that these are descriptive of regularity, and not explanatory of the ultimate reason for those processes. But in the case of our own wills, we demand more than freedom from causal force—we want freedom, too, from rigid uniformity. We want spontaneity, uncertainty, the ability to do "as we please." Even when men regarded the physical world as being under the reign of an absolute uniform order of causal necessity, many *felt* that they themselves were free. Who could predict what they would do in a given situation? Picking up a stone, could they not throw it either north or south? Or going to a railway station, were they not free to board a train either for Boston or for Philadelphia? Could they not, barring external hindrances, choose to do either a good or an evil act, enter the profession or business of their choice, marry if they desired and, the lady being willing, whom they chose? All of this seemed a matter of ordinary experience.

Then we began to learn more about ourselves. Factors of heredity and environment began to receive scrutiny. It was learned that we form mental habits, that we are "conditioned" by our environment, experience, education. Our actions and even our choices are what they are because of

the kind of beings we have been moulded into. In what sense, then, if any, may we continue to regard ourselves as free agents, whose actions are uncaused and arise from a spontaneous source in their own mental beings?

In attempting to answer this question, two extremes must be seen clearly—one, complete determinism, the other, utter chance. We are inclined to place freedom between these two, but as far as possible from determinism, and as near as possible to chance. That action seems most free which might be otherwise, which is what it is because of no necessity, but because of spontaneous desire, which might have chanced to be different. A little reflection, however, will be sufficient to show that *chance* and *freedom*, far from being identical or even allies, are incompatible factors in any action. Chance means the absence of cause; the absence of predictability; the absence of regularity in the order of the action and its antecedent circumstances. To imagine oneself doing something by *chance* is to imagine oneself doing that thing for no cause or reason. But to think of doing anything by *choice* is to think of doing it for a reason, or because of a *preference*. One is not free when an external force, whether poverty, or the revolver of a bandit, compels him to act as he does. But neither is one free when he does not prefer to do what he does for any other reason. The absence of a taste or reason or motive is as much a barrier to real choice as is an external impediment. There is no freedom in the acceptance of one or two equally unknown courses of action.

The conditions under which we may have freedom are three: (1) absence of external restraints; (2) knowledge of the meaning of the selection—that is, of the consequences and their significance; (3) a definite character in the one making the choice, so that some consequences may seem more desirable than others. If we do not know the consequences of two courses of action, obviously we are not in a position to prefer one to the other. But equally, if we do not have definitely formulated attitudes, ideas, tastes, pur-

poses, or, in other words, if we are not definitely organized individuals, there will be no basis for a recognition of greater harmony between ourselves and one course of action than another. Hence there will be no foundation for preference, and no genuine choice.

Chance, then, no less than determinism, is the enemy of freedom. With the passing of the idea of cause as a force, determinism in any sense of a binding compelling power lost all claim to consideration. If the term be applied to the mere fact that regularity of sequence in events renders them predictable, does this destroy freedom? If we are correct in believing that a free act does not require or even permit the element of chance to enter, it does not. Freedom is not doing what we do not want to do, nor what we are completely indifferent about, but it is doing that which we wish to do. To prefer or wish to do something is to feel that the consequences will be agreeable. For them to be so, there must be a reliable order in the course of events, so that we may predict with fair assurance what the consequences actually will be. Also, for the consequences to be agreeable requires a definite nature in the chooser, with which they may be in harmony. Whatever the source of this nature, and whatever heredity, environment, or conditioning may have had to do with it, at any moment it is what it is. At that moment, a free choice can be no other than that which seeks consequences in harmony with the nature that then exists. I am free, not in choosing what anyone else might find agreeable, but what I, whatever I am, and however I came to be that, believe that *I* will find agreeable.

The problem of freedom then turns out to be primarily one of discovering what we really and fundamentally *are*. The child thinks his freedom is curtailed very seriously when a parent refuses to allow him to make a plaything of a loaded revolver, or again when he is forced to attend school against his ardent desire to go fishing. The greater wisdom of maturity assures us that these are not violations of the

child's real will, but of what he, in his ignorance, thinks is his will. But on many points maturity, too, is ignorant, and to that extent destroys its real freedom by following a misguided pseudo-will. As human beings, we are rational in some degree—a great enough degree to know that a reasonable course of action is better and more to be desired than an unreasonable one. If freedom consists in doing what is agreeable to our natures, and if our natures are those of rational beings, no extraordinary logical skill is required to reach the conclusion that genuine freedom is to be found in doing the most reasonable thing in any given situation. When traveling in a foreign country and coming to an intersection of highways, there will be less chance but greater freedom in my action if I am able to read the directions on the sign post. Far from a free act requiring chance and uncertainty, it will be seen that a genuinely free act is in a sense always determined by the fact that it is the most reasonable action under the existing circumstances. Thus, there is no inconsistency involved in saying that an all-wise and all-powerful God, as all-wise, would be obliged always to do the best, yet at the same time in saying that such a Being would be completely free. The best alone would be agreeable to His nature, and the best in all cases would be the *one* most reasonable act.¹

¹ For more adequate discussion of this subject, cf. the writer's *Ethics*, Chapter XIV. Published by Harper and Brothers, New York, 1933.

Literature dealing with the subject-matter of this chapter is suggested in the bibliography at the end of the book.

CHAPTER XIV

KNOWLEDGE AND TRUTH

I. "THE EGO-CENTRIC PREDICAMENT"

What can we know? This question was placed first by Kant, among what he regarded as the three great inquiries of man.¹ Logically, this priority is not difficult to justify, for until it is possible to determine what *can* be known by human beings, and what means we possess for reaching *certainty*, it may be held that we have no reliable basis for determining which of our conclusions represent genuine *knowledge*, and which are but false or questionable *opinion*. But is it, in fact, ever possible for us to reach complete certainty about anything whatsoever? If so, what kind of things can be known in this way? Is it possible, for example, to gain certain knowledge with respect to the existence and nature of God or personal immortality? Is it possible to know what standards of moral conduct are really *best*? Can the sciences hope to reach absolutely certain conclusions? Are the "truths" of mathematics unquestionable? Is it possible to know the nature of physical objects? May we be certain that an external physical world and other people actually exist? Are there any *necessary* truths—or any truths so clear and "self-evident" that they cannot be doubted?

It frequently has been urged that we know only our own experiences—that is, we know how things *appear* to us, but never what they are in themselves. Thus the world for each of us is regarded as *a world of appearances*. Perhaps there is a real world of objects and events external and independent of us, which in some way is responsible for these appearances.

¹ *What can I know?*—the problem of knowledge. *What ought I to do?*—the problem of ethics. *What may I hope for?*—the problem of religion.

If such a world exists, we must perceive it by means of human modes of perception and think of it by means of human modes of thought. *What* we see, taste, or feel is not determined solely by the nature of the external object, but quite as much by the peculiar nature of the human perceptual apparatus which does the perceiving. To perceive or to experience anything is not passively to receive an impression of it, as a camera plate might do. Our perceptions of things might better be likened to the portraits painted by an artist. They are not simple reproductions but active responses on the part of an organism with definite physical and psychological characteristics of its own. They express the artist's powers and limitations of perception and creative insight. Now if all experience is the experience of *someone*, and presents not objects as they are in the world, but a human interpretation of them, in what sense, if any, may we hope to secure genuine knowledge of the objects themselves? Clearly we can never cease to be ourselves, or expect to perceive or know except by means of our human ways of perceiving and knowing. If we enjoy the redness of a rose or its fragrance, are we not merely enjoying our own sensations? If we slip on an icy sidewalk in winter, are not the sensations of hardness and coldness our own? How, indeed, may we be sure that roses, sidewalks, or other objects are external at all, and not merely our ways of construing our sensations?

In ordinary life, when uncertainty is felt with respect to the reliability of any impression or conclusion, we usually appeal either to further experience of our own, or to the experience of other people. If there is doubt with regard to a scientific observation, the observer himself may seek to repeat it, and also confirmation may be sought from other observers. In matters of common experience, we feel that our own impressions are "proven" to be correct if all or a large majority of other people agree with us. If ten people are in a room and all agree that they saw a masked face outside the window, each feels that his own impression is

substantiated by the experience of the others. If a hundred students are in a lecture room, and if all agree that there are a lecture desk, a blackboard, a chair, and a professor on the platform, may we not conclude that this *certainly* is so? The sceptic replies that we may not—for at least two reasons. One is that for each student, not only the furnishings but also the other ninety-nine students and the professor are *his ideas*. If they seem to agree with him about objects in the room, or anything else, this appearance of agreement, too, is his idea. One may dream that one is in Timbuktu and that a hundred Timbuktunese assure one that one is there. A second objection of the sceptic may be modified to the extent of supposing that other human beings actually exist, and that all actually have in general the same ideas about external objects. All might agree, for example, as they passed or seemed to pass a decorator's window, that a massive walnut table with claw feet was on display there. But, says the sceptic, this is merely to admit that, presumably for some reason, any human being is affected in about the same way by whatever it is that actually exists at this point which we call "a decorator's window."

If we assume for the moment that there is no actual external world of objects, but that all objects are our ideas, will not the very absurdities and contradictions that follow from the assumption be sufficient to prove that it is false? The amazing fact is that they will not. The philosopher Berkeley, in arguing that the world is a world of ideas, and that no object in it exists except as it is perceived by a mind, pointed out that this would in no way violate our actual experiences—it would not change those experiences one whit. For since we experience only our impressions and ideas, the world as we do or can experience it must be these and nothing more. If something more (such as *matter*) is assumed, the assumption is purely gratuitous. Moreover, the *something* other than idea, which is assumed, must itself be thought about, and therefore be an idea. If I say that matter is unlike

ideas, I can mean no more than that I have an *idea*—namely, that of *matter*, which is marked by the eccentricity of being *thought* not to be an *idea*. Berkeley writes: “That neither our thoughts, nor passions, nor ideas formed by the imagination, exist without the mind is what everybody will allow. And to me it seems no less evident that the various sensations or ideas imprinted on the Sense, however blended or combined together (that is, whatever objects they compose), cannot exist otherwise than in a mind perceiving them. . . . The table I write on I say exists; that is, I see and feel it: and if I were out of my study I should say it existed; meaning thereby that if I was in my study I might perceive it, or that some other spirit (*mind*) actually does perceive it. There was an odour, that is, it was smelt; there was a sound, that is, it was heard; a colour or figure, and it was perceived by sight or touch. This is all that I can understand by these and the like expressions. For as to what is said of the *absolute* existence of unthinking things, without any relation to their being perceived, that is to me perfectly unintelligible. Their *esse* is *percipi*; nor is it possible they should have any existence out of the minds or thinking things which perceive them.”¹ To objectors, Berkeley replies: “But, say you, surely there is nothing easier than for me to imagine trees, for instance, in a park, or books existing in a closet, and nobody by to perceive them. I answer, you may do so, there is no difficulty in it. But what is all this, I beseech you, more than framing in your mind certain ideas which you call *books* and *trees*, and at the same time omitting to frame the idea of anyone that may perceive them? But do not you yourself perceive or think of them all the while? This therefore is nothing to the purpose: it only shows you have the power of imagining, or forming ideas in your mind; but it does not shew that you can conceive it possible the objects of your thought may exist without the mind. To make out this, it is

¹ *Principles of Human Knowledge*, Part I, Section 3. Cf. also the discussion following.

Cf. the earlier discussion of Berkeley, pp. 115–121.

necessary that you conceive them existing unconceived or unthought of; which is a manifest repugnancy."¹

Anything which can be conceived is, by that very fact, brought within the realm of consciousness. Hence there is no escape for any human being from the domain of ideas—our experience is altogether self-enclosed. In suggesting a name for this situation, Professor Perry, though a realist, recognizes that "The argument calls attention to a situation that undoubtedly exists. . . . *No thinker to whom one may appeal is able to mention a thing that is not idea*, for the obvious and simple reason that *in mentioning it he makes it an idea*. No one can report on the nature of things without being on hand himself. It follows that whatever thing he reports does as a matter of fact stand in relation to him, as his idea, object of knowledge, or experience. In order to avoid making inferences unawares, it is necessary to have a name for this situation just as it stands. It will be convenient to call it '*the ego-centric predicament*' "²

Professor Perry points out that the predicament becomes most evident when we attempt to discover what difference the relationships of knowledge make to the thing which is known. To discover how our activities of perceiving and knowing an *object* add to or change the ideas which we gain of it, we may seek to compare these ideas with the object as it exists apart from them. But obviously we can never find or know the object except in relationship to ourselves, as knowers. If, within our thought, we attempt to subtract from our experiences of things that part which our own activities have added, this, too, proves impossible, for to deal with the residuum after the human activities of experiencing have been subtracted, is still to treat this residuum in terms of *our* mental activities. "If I close my eyes, I

¹ *Principles of Human Knowledge*, Part I, Section 23. Cf. also Professor Calkin's introduction to her edition. Published by Charles Scribner's Sons, New York, 1929.

² R. B. Perry, *Present Philosophical Tendencies*, p. 129. Quoted by permission of the publishers, Longmans, Green and Company, New York, 1912.

Cf. also Perry's "The Ego-centric Predicament" in the *Journal of Philosophy, Psychology, and Scientific Method*, Vol. VII (1910), No. 1.

cannot see what happens to the object; if I stop thinking, I cannot think what happens to it; and so with every mode of knowledge." But, warns Perry, "In thus eliminating all knowledge, I do not experimentally eliminate the thing known, but only *the possibility of knowing whether that thing is eliminated or not.*"¹

The problem which faces us is that of how serious a *predicament* this really is. Is there no escape? Must we conclude that since we know only our own ideas, we therefore have no means of knowing anything about the external world? Or if the human mind possesses some means for attaining genuine knowledge, what is that means? To these problems, various solutions have been offered and, in supporting these solutions, numerous philosophical schools have developed. Let us consider the more important of these attitudes briefly in turn.

II. DOGMATISM

It is doubtful if *dogmatism* should be classed as a philosophical solution to the problem of knowledge, for the reason that by its nature it is a negation rather than an expression of philosophical ways of thinking. *The dogmatist is one who maintains conclusions which he regards as certain, but which he neglects or declines to examine critically.* Few if any of us are dogmatists with respect to all of our views, but also, few of us altogether escape dogmatism at every point in our thinking. As the description just offered suggests, dogmatism may be founded either on *neglect* to examine, or on *refusal* to examine. An example of the former is found in the attitude of the "ordinary man" with respect to his knowledge of the external world. He is confident that the external physical (or even *material*) world exists, and he is certain that physical objects are about as they seem to him. To doubt such a view of the matter seems to him the height of folly. What need is there to question what one must only open one's eyes to see, or reach out one's hand to touch?

¹ Perry, *Present Philosophical Tendencies*, p. 130.

In the *refusal* to examine critically one's conclusions, we find a form of dogmatism of far greater philosophical interest and one lacking the simple naïveté of the common-sense view. Usually it appears in the defense of religious beliefs, but not infrequently it has attached itself to philosophical doctrines as well. The best example of the latter, though by no means the only one, is to be seen in the veneration paid by the mediæval scholastic philosopher to the writings of Aristotle. For him, this authority was second only to that of the Bible and the Church. If one could but put one's argument in a form which coincided with the statements of Aristotle, he might write *ipse dixit* ("He [Aristotle] said it") after it, and be confident that this alone gave an overwhelming power. There have been periods when the followers and uncreative imitators of Plato, of Kant, of Hegel, and of numerous others have felt a dogmatic confidence, perhaps less strong, but at least akin to this.

In the field of religion, dogmatism has been more strongly supported. Here there are unique reasons to be urged in its support. Most religions claim to possess not only knowledge *about* that which is supernatural, or above man's realm of experience, but also, they claim to possess some *direct and supernatural way of knowing* this higher realm. This higher means of knowledge may be presented in the form of *sacred writings*, the contents or even the letter of which are thought to have been directly revealed to their authors by the Deity. If these writings are in some instances repulsive to our moral sense, or illogical and childish in their reasoning, we may choose to disbelieve in their divine origin. If they contradict our knowledge and experience, we may choose which we shall regard as more reliable. But if their teachings are exalted and their wisdom profound, it may be asked: how shall we say with certainty that they were not uttered by divine authority—unless, indeed, *we* would resort to mere dogmatism?

In addition to a heritage of sacred writings, and even before men learned to write, there have been in successive

ages men who seemed to be gifted with supernatural knowledge. At times this prophetic power was expressed in the foretelling of events. Among primitive peoples the belief is quite universal that there are ways in which some men may gain knowledge directly from the gods, and among civilized and cultivated peoples the belief in such prophetic powers often has been retained. "So far as I know," wrote Cicero, "there is no nation, however polished and educated, or however brutal and barbarous, which does not believe that warnings of future events are given, and may be understood and announced by certain persons."¹ Cicero, probably following Posidonius of Rhodes, points out that there are two forms of divination: *artificial* and *natural*. The first requires trained skill in interpreting the signs which the gods provide—as for example, the understanding of marks on the entrails of animals which have been sacrificed.² The second, or natural divination, requires no such interpretation, but consists of direct communication of knowledge from the gods to a mortal, who is then said to be *inspired*. But foretelling is not the sole work of the prophet, who might also be regarded primarily as a teacher. Thus the prophets of Israel, though they might work miracles or foretell events, thus vindicating their right to speak with authority, yet were looked upon above all else as teachers, inspired with the truth of God. If such *inspired* men were seen to be cruel and malicious, we well might question their selection to be the oracles of God, but if they are men of high character, who fearlessly proclaim an exalted truth to their fellows, again it may be asked how anyone can be certain that their claim to divine knowledge is unjustified. To this is sometimes added

¹ Cicero, *De Divinatione*, I, 1.

² "The negro going out of his hut one morning strikes his foot against a peculiarly-shaped stone. . . . The Samoan watches the behavior of a spinning cocoanut, or the flight of a bird to right and left. The Central Asiatic notes the cracks on a tortoise's shell. . . . The liver is selected as the special seat of the prophetic faculty, and Babylonian and Etruscan developed a common diagnosis of its marks. The Celt divined by the water of wells, or the smoke and flames of ascending fires, and slew his prisoners that the secrets of destiny might be discovered in their entrails." —J. E. Carpenter, *Comparative Religion*, pp. 177-178.

the argument that, if they were not what they claimed to be, they were imposters, and the noble character of their lives and teachings refutes such a supposition. Hence their words are accepted as true, not on the basis of examination alone, but on that of authority.

Again, it is widely held that God speaks directly and authoritatively through certain institutions. For example, in our own society, the Roman Catholic Church maintains a right to speak with complete authority on matters affecting religious faith and practice. A characteristic statement of this right is the following, reported from an address by the Bishop of Newport: "If the formulas of modern science contradict the science of Catholic dogma, it is the former that must be altered, not the latter. . . . (That dogma) expresses real objective truth. . . . Such truth is expressed in terms of sound philosophy, which will not be given up."¹ The Protestant churches differ from this position in denying any absolute authority to the Church. But in at least their more conservative representatives, they do maintain the divine supernatural inspiration and inerrancy of the Bible. In it, man possesses an infallible guide to thought and practice in matters of religion. In more liberal circles, this claim has been modified—the Bible, it is held, contains the highest expression of truth which men possess on matters of religion—but it is the work of God-inspired men, not the direct and infallible or inerrant dictation of God to men. But again, how can the sceptic show with certainty that any of these claims are unjustified by fact? He may assert that Church and Bible alike are without divine inspiration or authority, but in so doing, is he less dogmatic than their most extreme supporters?

Thus we see that in the claims of *religious* authority there may be a basis for dogmatism which cannot be proven false by argument. Moreover, the philosopher is not concerned

¹ Reported in *The Tablet*, August 27, 1904. Quoted also by Drake in his *Invitation to Philosophy*, p. 5. An interesting discussion of religious dogmatism will be found in the opening chapter of that book.

with disproving these claims—he may even accept certain of them, as the scholastic philosophers do. But there is one point involved, with which he *is* deeply concerned. He insists that while authority *may* speak on matters with which reason cannot satisfactorily deal, nevertheless it must regard reason not as its enemy, but as its ally. No authority, and no truth accepted on authority, can be harmed by reason's most critical examination of its validity—if the “authority” or the “truth” is genuine. The more rigorous the examination, the less likely is it to mistake that which is true for that which is false. Many and contradictory claims to authoritative truth are urged by diverse groups. Even if one were bent upon accepting some authority, he would be faced, nevertheless, with the question of *which* authority. This he must determine for himself, and how shall he choose intelligently, if not by weighing the claims of each authority, eliminating those which prove to be mere superstition, and adopting that which commends itself to his honest judgment in the light of all the relevant facts? And if, as a philosopher, one desires to investigate his problems independently of any and all authoritative statements, still the problem of authority need trouble him only in so far as it may have to do with hindrances put in the way of such independent and honest investigation. If anyone, in the name of authoritative truth, seeks to interfere with his sincere seeking after truth, he may well suspect that one and the claim to authority which he makes. But if the representative of authority has sufficient confidence in his authoritative truth to allow or assist others who seek that truth by other approaches, there is little reason to quarrel with him. He may or he may not be right, but that is a matter for him to judge in the light of his own thought.

III. SCEPTICISM

Broadly speaking, the sceptic is one who questions and doubts. Questioning and doubting are the basis of all intellectual endeavor, for one who never doubted what he was

told, or what his social group maintained to be true, or what he himself seemed to find through perception and other experience, scarcely could be regarded as an intelligent individual. It is through doubt that all progress comes, and that the world is gradually freed from its errors and superstitions. Had not someone dared to doubt their reality and efficacy, we should still fear ghosts and duck witches, confidently believe that the earth was flat, and resort to the tom-toms of the medical man to drive away the demons when we are ill. No less, in the field of philosophical inquiry, without a spirit of doubt, we should spend our time in merely repeating the ideas of others—if indeed, “others” had questioned for us. Otherwise, we should still be repeating our primitive tribal traditions. In this sense, we may say that all philosophers, like all intelligent men of whatever professional interest, are sceptics. Indeed, in the case of the philosopher we may say, more than of most others, that his attitude is a sceptical one. If he is to push back beyond the utility or the appearances of things to discover the real nature of their foundations, he must not be content with superficial answers at any point. On no other investigator, perhaps, are the demands for subtle distinction and exhaustive analysis so great.

Philosophical scepticism, however, may be of two kinds: (1) it may consist of the *method of questioning* all assumptions and conclusions, forcing each to justify itself before it is accepted; (2) it may consist of a *conclusion*—namely, that knowledge is impossible. It was in the former sense that Socrates, for example, was a sceptic, when he held that most supposed knowledge of his fellow Athenians merely covered up their ignorance from their own and others’ view. But it was in the second sense that the Greek *sophists* were sceptics, Gorgias, for example, maintaining: “First, nothing exists; second, if anything did exist we could never know it; third, if perchance a man should come to know it, it would remain a secret, he would be unable to describe it to his fellow-men.” Thus all philosophers employ the sceptical method of doubt

and inquiry, but relatively few accept this second form of scepticism, or disbelieve in any possibility of knowledge.

If we consider the position of this second group, with their assertion that no knowledge is possible, we shall be told, of course, that there is no way out of the ego-centric predicament. If one resort to reason and develop ever so strong a logical argument in proof of some conclusion, as that the external world of nature exists, the sceptic but smiles at one's labors and utters the reminder that reason itself and logic are but *human ways* of thinking. They may or they may not have any objective validity—we do not know. There is no way of proving that rational is better or "truer" than irrational thinking, for to *prove* this, we should be obliged to use reason, and so to argue in a circle. If one turn from reason to experience, as a means of making certain the real existence of the external world of nature, or the validity of our knowledge of it, again one will be greeted by the sceptic's retort that experience, too, is altogether human. Did not its material come to us through the senses? Is not its organization based upon the ordering principles of our own minds? If, in turn, one seek the aid of *intuition*, must it not be *your* intuition or *mine*, and interpreted in terms of *our human ways* of thinking and experiencing? So the sceptic settles himself comfortably within himself, quite certain that the walls behind which he is enclosed are impregnable to any onslaught from the outer world—if there should chance to be an outer world. Thus Pyrrho, the ancient sceptic, held that men should refrain from strong opinions upon any subject. Since all is doubtful, no conviction should be held firmly, but with an easy indifference—the mind should be kept serenely free. "This counsel," as Professor Hocking observes, "if one carried it out, would lead to an ideal poise, indifference, and practical uselessness such as no living man has ever attained. But if one could be sceptical enough to be moderate also about his scepticism (as Pyrrho proposed) this attitude might lend an easy urbanity to the manners, and a supple,

opportunism to the character, which would allow a man to float genially with a noble superiority to all earnest purpose in a society whose hard work was done by others. The most attractive examples of this type are to be found in men of the world who, having reached that philosophy which consists in a contempt for philosophy, a graceful and sophisticated aloofness of mind, cherish the sentiment of Montaigne, 'How kindly and healthful a cushion are ignorance and incuriousness for a well-conducted head.' "¹ On the other hand, one may take one's scepticism as a burden—the result of that affliction of intellectual blindness which clouds all human eyes to the truth. In this spirit, Anatole France laments: "I feel that we live surrounded by a mere phantasmagoria, that our glimpse of the universe is purely the effect of a nightmare that breaks the restless sleep that is our life. . . . For it is plain that we can know nothing, that all things combine to deceive us, and that Nature is only making cruel sport of our ignorance and helplessness."²

IV. PHENOMENALISM

Perception involves the activity of a perceiver. These activities have a distinct nature of their own, and are regulated by their own principles or laws—those, namely, of the human mind. Hence external objects *as we perceive them* cannot be supposed to be the same as, or even like, the external objects which stimulate our sense organs. There are two worlds: one, the real world of things-themselves; the other, the phenomenal world, that is, the world which we construct in terms of our own mental laws, from crude sensations of sight, touch, taste, hearing, and smelling. Although we may not suppose that the nature of things-themselves is ever revealed in our phenomenal constructions of them, nevertheless it is these phenomenal constructions which make up the world as we know and experience it. This is

¹ W. E. Hocking, *Types of Philosophy*, pp. 128–129. Published by Charles Scribner's Sons, New York, 1929.

² Anatole France, *The Garden of Epicurus* (translated by A. Allinson), p. 62. Published by Dodd, Mead and Company, New York, 1920.

the general conclusion which phenomenism urges upon us—a conclusion which admits our inability to make our way out of the ego-centric predicament.

The most influential of all phenomenists was Immanuel Kant.¹ In calling his greatest work a *Critique of Pure Reason*, and in designating his general philosophy as *critical*, Kant suggested his central motive. He desired to subject the processes by which man gains what he regards as *knowledge* to rigorous critical examination. This examination must not be thought of as merely a psychological one, seeking an account of the physical or psychological activities involved in processes of thinking, remembering, or experiencing emotion. His interest is not with these processes as such, but with their product. Can the processes of perception and thought ever yield reliable or certain *knowledge*? Under what conditions, if any, is such knowledge possible for men? The more dogmatic thinkers of his day and before had sought to establish certain conclusions with respect to such subjects as the existence and nature of God, the creation of the world, the immortality of the soul, and the nature of the external physical world. The sceptical philosopher, Hume, had shown the unreliability of much of this reasoning. Man knows only his own impressions and ideas, Hume had taught. He cannot know what *causes* these, for the very idea of *cause* is a human one, which arises from the natural tendency of the human mind to put its experiences together in an intelligible way. There is no assurance that things are related causally, or that our impressions and ideas need or have causes in the form of external objects, or of a thinking self. Perhaps we are not independent entities which *have* ideas; perhaps we are simply the series of our ideas. It was to Hume that Kant gave credit for awakening him from his “dogmatic slumbers.” He did not merely accept Hume’s scepticism, but recognizing its essential strength, he determined to inquire critically into the nature of human knowing, seeking thereby to discover whether any certainty is possible.

¹ Cf. biographical note, and Kant’s view of substance, pp. 132 ff.; also cf. pp. 180 ff.

It is clear that some conclusions are certain, namely, those which do no more than state in their predicate what was already implied in their subject. For example, since by *triangle* is meant a figure with three angles, one may be certain of the truth of the judgment: All triangles have three angles. But such a proposition merely calls attention to something already present—the predicate adds nothing new. Such judgments are known as *analytic*—representing as they do a mere analysis of the given subject. But if new knowledge is to be gained, there must be something more than such analytic judgments; there must be some synthetic activity, by which something not already in the subject is added to it by the new connection with the object. The question of whether our judgments can give us knowledge, therefore, is that of whether the mind is ever capable of putting together a subject and object in a new combination, yet of being certain that this new combination is a real and necessary one. This constitutes the basic problem of the *Critique of Pure Reason*.¹

Our ways of knowing are evident to us only in the actual activities which enter into securing particular items of knowledge. These particular items may appear simple, but in fact, they are complex. Here, Kant believes that two elementary activities are present: (1) that by which the knowing activities are started, so to speak, by an outside agency; (2) that of the processes of knowing, themselves. The latter constitute his chief problem of investigation. These activities of the knower are not chaotic, but proceed according to a definite and regular order. That which is produced by external influences, Kant calls the *matter* of sensation; that which the faculty of knowing itself imposes on this matter, he calls *form*. The matter, taken by itself, is disorganized; it is not knowledge. The form, taken by itself, is without content and empty; it, too, is not knowledge. To know is to organize matter in the order of the forms of the mind. Pointing to piles of building material on a vacant plot, one

¹ Kant's statement of the problem was: "Are synthetic *a priori* judgments possible?"

may not say correctly—"That is my house." Nor may one rightly make the same assertion with regard to the architect's plans. The house will consist of the material, organized in the form of the architect's plan. Similarly, the constructions of knowledge represent a synthesis of material derived from perception and organized in the mind's forms. Thus, Kant points out that *perception* alone is blind—its material is without organization, and hence without meaning. On the other hand, *conception* or the plan, or form, by itself, is empty, that is, it is without any material to organize. The forms which the mind uses are of two general kinds: (1) Forms of Perception; (2) Forms of Understanding. Of the former, we find two: space and time. Because of the inconsistency involved in them, space and time cannot be realities in the world of things-themselves, but must be accounted for as forms which we use in the organization of experience. Through the senses come brute data—feelings of hardness, color, sound, taste, etc. The first synthetic activity of the mind is to bring these together into objects, located by space and time in relation to one another. Further organization proceeds by means of the Forms of the Understanding or *Categories*. These are twelve in number, but all may be reduced to the concepts of *quantity* and *causality*, which constitute the two chief forms of the total synthesis in which knowledge consists. Added to the Forms of Perception and of Understanding, Kant places the *Ideas of Reason*. Here the synthesis goes beyond the organization of the mere material of sensation, uniting the particular objects of knowledge in terms of an order of meanings and values which transcends anything ever perceived by the senses.

The philosophical teachings of Kant have been more influential than those of any other modern philosopher, but they also have been a subject of more controversy, perhaps, than those of any other philosophical writer. In part, this controversy has been due to the complex and frequently confusing manner of statement which Kant employed, but in part, too, it has been due to difference of view with re-

gard to his assumptions and reasoning. Into these difficulties we need not enter here, but consider merely the general nature of our knowledge of the world as Kant describes it. This may be stated summarily. Our experience, as we have seen, is made up of its raw material, provided by sensation, when this material has been organized under the forms of the mind. Until it is so organized, it is chaotic and meaningless—the mere feelings of hardness, coldness, or sweetness which might come to an idiot as well as a rational being. All the connections which bind these sensations into groups which we regard as objects, and which bind these objects together by relations of space and time, quantity and causality, meaning and value, are connections made by the mind. It is *connections* which bring things together into a world. If these are imposed by the mind, then the world which we experience, the world about which we think, is a *phenomenal world*. That *things-themselves* actually are, and that these *things-themselves* in some way provide the basis for our sensations, seems to Kant to be highly probable. But we can know nothing whatsoever with respect to them. Anything which we know or need to know lies within the realm of experience—we do not know or need to know anything about *things-themselves*, or the kind of a world which they really constitute—a realm which Kant differentiates from the phenomenal world of our experience by calling it the *noumenal world*. Thus the concept of the noumenal world is a purely negative and limiting one—it is that world about which we know nothing and cannot profitably speculate.¹

Although Kant thus leaves us in a state of scepticism with respect to the nature of the world of *things-themselves* and our knowledge concerning them, yet he introduces a further ground by which the practical evils of scepticism may be overcome. This new ground is not only important in itself, but constitutes the essential basis of what may be regarded

¹ Kant, for reasons which we need not pursue, argued that necessary synthetic knowledge can be gained by pure reason, however, in the very limited fields of mathematics and theoretical physics.

as the most important contemporary interpretation of phenomenism, that, namely, of *pragmatism*. This new ground is the *practical reason*. It is true that pure reason may not prove the existence or know the nature of God, morality, or the external world. Yet, there are demands within us, demands of so imperative a character that they may not be denied. Thoroughgoing scepticism fails because it attempts to still these demands. They cannot be quieted; they must be satisfied. But they should be satisfied, not by pretenses of false knowledge, but by faith. Kant maintained that he was clearing the ground of false knowledge by his critical attacks, in order to make room for faith. One cannot prove God's existence, or the principles of morality, or of art, or the existence of the external world by pure reason, but to live in a valuable satisfactory way we may be obliged to believe in them. Theirs is the proof of *value*, not of argument, and who is to say that the value of a belief may not be as strong a justification for holding it as could be any purely logical argument for its validity? Might not Kant even have gone farther, and pointed out that the only possible basis for accepting one line of reasoning in preference to another, or for accepting reasoning itself as valid, must be in the end that the "better" seems to us to possess greater *values*—such as consistency, completeness, etc.? At least, the pragmatist would feel that he might have done so.

V. PRAGMATISM

"A conception of the world arises in you somehow, no matter how. Is it true or not? you ask.

"It *might* be true somewhere, you say, for it is not self-contradictory.

"It *may* be true, you continue, even here and now.

"It is *fit* to be true, it would be *well if it were true*, it ought to be true, you presently feel.

"It *must* be true, something persuasive in you whispers next; and then—as a final result—

"It shall be *held for true*, you decide; it *shall be true*, for you.

"And your acting thus may in certain special cases be a means of making it securely true in the end.

"Not one step in the process is logical, yet it is the way in which monists and pluralists alike espouse and hold fast to their visions. It is life exceeding logic, it is the practical reason for which the theoretic reason finds arguments after the conclusion is once there."¹

Thus William James describes the growth of our views about the nature of the world. The final test is that of action. There is a will to accept some one attitude; there is a directing of thought and action according to this assumption—or *as if* this were the one finally true position with reference to the matter. There is no test of the truth of one's knowledge except that it does or does not meet the practical needs of life. What it tells does or does not prove valuable when put to the trial of practical action. There is no direct or absolute knowledge of the real world. We have but beliefs about it. These beliefs are really no more than "rules for action." Any idea *means* what it will do; "what conduct it is fitted to produce." Its importance for us and its sole significance consists in the manner in which it affects actions. Our theories about the external world can never fruitfully be regarded as mere answers to enigmas which puzzle us. They are not dogmatic easy-chairs in which to rest from intellectual labors, but instruments which may or may not prove serviceable in further undertakings. Their validity must be determined by their capacity to aid us. A theory of nature, no less than a physician's diagnosis, must be judged good or bad, true or false, by the success with which it enables us to act. "'Truth' in our ideas and beliefs means the same thing that it means in science. . . . Any idea upon which we can ride, so to speak; any idea that will carry us prosperously from any one part of our expe-

¹ William James, *A Pluralistic Universe*, Lecture VIII. Quoted by permission of the publishers, Longmans, Green and Company, New York, 1909.

rience to any other part, linking things satisfactorily, working securely, simplifying, saving labor; it is true for just so much, true in so far forth, true *instrumentally*.¹

From such a point of view with regard to knowledge, a theory of *things-themselves* is quite superfluous. At best it is an hypothesis which cannot be tested and therefore is idle. "A hypothesis which in the nature of the case is incapable of any conceivable test is the hypothesis of nothing."¹ Knowledge, as viewed by such thinkers as James, Schiller, and Dewey, is not mere *contemplation*—rather, it is an *operation*. To know is not to view from afar; it is not to passively receive; it is not to interpret in the form of thought what in fact is going on in an alien realm of physical activities. My knowledge of anything depends upon my interactions with it. I believe it to be a certain kind of thing, and treat it accordingly. If it serves the purposes which I have in mind for it, my idea of its nature is justified. The difficulty which philosophers have found in dealing with the problem of knowledge has been due, thinks Professor Dewey, to their failure to think of knowledge in this *operative* way. Our failures have come, he states, because "We tend to think of it (*i.e.*, knowledge) after the model of a spectator viewing a finished picture rather than after that of the artist producing the painting. Thus there arise all the questions of epistemology with which the technical student of epistemology is so familiar, and which have made modern philosophy in especial so remote from the understanding of the every-day person and from the results and processes of science. For these questions all spring from the assumption of a merely beholding mind on one side and a foreign and remote object to be viewed and noted on the other. They ask how a mind and world, subject and object, so separate and independent can by any possibility come into such relationship to each other as to make true knowledge possible. If knowing were

¹ C. I. Lewis, *Mind and the World Order*, pp. 64–65, footnote. Published by Charles Scribner's Sons, New York, 1929. The more advanced reader will find this book of extraordinary significance.

habitually conceived of as active and operative, after the analogy of experiment guided by hypothesis, or of invention guided by the imagination of some possibility, it is not too much to say that the first effect would be to emancipate philosophy from all the epistemological puzzles which now perplex it.”¹

But how shall one test the instrumental value of his theories? How shall one discover the operative worth of his ideas? To some degree this may be done by immediate consequences which he may himself recognize and evaluate. In the large, however, the test must be a *social* one. “Those unfortunate enough to have acquired and retained an exclusive view of truth,” says Professor Schiller, “are usually secluded in prisons or asylums, unless their ‘truth’ is so harmlessly abstruse as not to lead to action, when they are sometimes allowed to be philosophers! Truth, then, to be really safe, has to be more than an individual valuation; it has to win social recognition, to transform itself into a common property. But how? It is by answering this question that Pragmatism claims to have made a real advance in our comprehension of truth. It contends that once more, only more signally and clearly than in the individual’s case, it is the usefulness and efficiency of the propositions for which ‘truth’ is claimed that determines their social recognition. The use-criterion selects the individual truth-valuations, and constitutes thereby the objective truth which obtains social recognition. . . . Truth is the useful, efficient, workable, to which our practical experience tends to restrict our truth-valuations; if anything the reverse of this professes to be true, it is (sooner or later) detected and rejected.”²

The notion of any *absolute* truth, or of anything’s being absolutely true, from the pragmatic point of view is meaningless. “Every truth is essentially relative to the conditions

¹ John Dewey, *Reconstruction in Philosophy*, pp. 122–123. Published by Henry Holt and Company, New York, 1920.

² F. C. S. Schiller, *Humanism*, pp. 58–59. Quoted by permission of Macmillan and Company, publishers, London, 1903.

out of which it sprang and to which it was meant to refer. So when these conditions change, we must always be willing to revise it and to adapt it to the changed conditions.”¹ Valuation is a continuous process in life. If knowledge, or those ideas which we hold to be *true*, are so designated because they serve us well as instruments, at our present state of understanding and with our present interests, shall we not expect these values to shift as our understanding matures and new interests supplant old? A word of warning should be spoken, however, before leaving the discussion of the pragmatic position (or expressions of this position such as the *instrumentalism* of Professor Dewey, the *humanism* of Professor Schiller). The critics of pragmatism have persisted in numerous cases in giving to the terms “use,” “practical,” “utility,” a narrower meaning than that intended by representatives of the position. A good description of what is meant is offered by Professor Dewey: “To be useful is to fulfill need. The characteristic human need is for possession and appreciation of the meaning of things, and this need is ignored and unsatisfied in the traditional notion of the useful. We identify utility with the external relationship that some events and acts bear to other things that are their products, and thus leave out the only thing that is essential to the idea of utility, inherent place and bearing in experience.”²

Probably no one would doubt that pragmatism has emphasized exceedingly important truths in its doctrine, and truths which were in need of emphasis. The fact that knowing is altogether a human activity, strangely, had been too largely overlooked. Philosophers and theologians had tended to confuse the notion of having ideas *about* absolute and transcendent subjects, with that of possessing knowledge on these subjects which was itself absolute or transcendent. Likewise, there was a tendency to regard knowledge

¹ F. C. S. Schiller, *Logic for Use*, p. 149. Published by Harcourt, Brace and Company, New York, 1930.

² John Dewey, *Experience and Nature*, p. 362. Published by The Open Court Publishing Company, Chicago, 1925.

about the eternal world of reality, which may be changeless, as itself complete, eternal, and changeless knowledge. In fact, of course, one may believe that an absolute order of reality has eternal being and is the basis for our changing world of appearances, yet recognize quite frankly that our knowledge of that reality is a wholly human, experimentally derived, and growing knowledge. But is pragmatism justified in going farther than this? Is it justified in assuming that because change is a characteristic of *our experience*, therefore there is no changeless or eternal truth or order? Can the pragmatist, particularly the instrumentalist, answer satisfactorily such a criticism as that made by Professor Hocking, when he points out: "The idea of an experiment itself requires that something does *not* move, namely the conditions which make the experiment significant. . . . The mind which experiments must remain the same and mean the same by its enquiry when it ends as when it began; otherwise the experiment is irresponsible. And in so far as some problems remain the same throughout the life of the individual and of the race, there must be some *constants* in the life of men and of society. To make every habit and foundation tentative, and every standard provisional, would be like living in a house which was sliding in its place and melting over our heads. . . . Truth must be cumulative in the race; but to accumulate, there must be an element of permanence in what is gained."¹

Further, if every *truth* is justified by its ability to meet a need successfully—if it is this which gives it the character of being a *truth*—then two questions present themselves: (1) if one theory or idea meets human needs better than others, must we not believe that it does so for the reason that it expresses the *real* nature and relations of things better than they? Does not its success itself require a ground in the real order of things? Is it not more than *instrumentally* true, then, for does it not imply a real world of a particular

¹ W. E. Hocking, *Types of Philosophy*, p. 168. Published by Charles Scribner's Sons, New York, 1929.

kind? In a different kind of world, we may scarcely suppose that it could be the most successful. Hence, does not the instrumentalist, or the pragmatist generally, restrict his knowledge unnecessarily by declining to consider further what kind of world the beliefs and actions which he finds successful, actually imply? (2) If one may judge the truth of thought only by its fruits, must one not have some further standard for judging the quality of the fruits? If we are faced with problems of how to control factors in our situations in a way which will be most satisfactory, must we not have some further standard which may be applied to *any and all* situations, to guide in the determination of what solutions actually will be most *satisfactory*? No pragmatist, I think, would hold that it is only immediate satisfaction which he seeks. Life must be looked at as a whole, future consequences must be considered. And further, not only individual but also social consequences must be taken into account. In the light of all these factors, the decision as to the relative success and so the *truth* of theories and ideas must be made. Now anyone will agree that that view or solution which will contribute most largely to the ultimate good of the individual and of mankind as a whole must be the true one. But to find which of several solutions *will* do so requires more than the pragmatist would seem to allow us, namely, a knowledge of the nature of that ultimate good or truth. All would agree that that which works best in the long run and for mankind as a whole is good and true. But to make this standard useful, it is necessary to know what we mean by this final good, and it is necessary, too, to know the principles which must be followed even in the face of immediate situations where they may seem highly unsuccessful. All will agree that that which is true will work in the long run. We are told by Professor Schiller and others with a good deal of vehemence that this may not be converted to read that all which works is true.¹ But if *working* is a function of truth, but not its primary test, the critic may ask,

¹ Cf. F. C. S. Schiller, *Logic for Use*, pp. 157 ff.

then what distinctive test or meaning does truth have for the pragmatist? Is he not obliged to fall back upon some other, and some universal standard, not unlike that of the rationalist whom he chides?

VI. INTUITIONISM

Pragmatism has been concerned with protesting against intellectualism, or the effort to reach knowledge of reality through reason. In this protest, it has found itself at important points in close relationship to the philosophical position known as *intuitionism*. This was true especially of the thought of William James, whose high esteem of the intuitional philosophy of Bergson has been referred to in an earlier chapter.¹

The term *intuition* has been employed with several meanings. From the point of view of philosophical consideration, however, it refers to some form of direct apprehension of truth. That is, it will depend for knowledge neither upon ordinary observation of factual experience, nor upon reasoning. The truth may be directly seen and recognized—all other methods by which knowledge is sought are inferior to this, it is held. Experience which depends upon the senses and reasoning which relies upon logical connections of thought may have their place, but neither reaches the deepest reality. This deepest reality must be grasped immediately by intuitive insight, direct apprehension, feeling. Would you discover ultimate reality, Bergson warns us, you must feel that reality deep within yourself. Looking at objects from the outside, one gains at best but their surface appearances; he who would actually *know* those things must approach them from within; he must get within the thing; he must feel with it. One does not know other people, one's own friends, by knowing how they look—one may know as much about a stranger. One *knows* one's intimate friends by entering into their lives, by experiencing with them the

¹ Cf. pp. 184 ff. Also cf. James' lecture on "Bergson and His Critique of Intellectualism" in *A Pluralistic Universe*, Lecture VI.

happenings which befall them; by feeling in such unison with them that one anticipates and feels within himself their very reactions. It is no less so with the objects about us and with the whole world of reality. One knows that world, possesses real truth concerning it, only as one enters through feeling into unison with it. The knowledge of the sciences is external knowledge. It tells us *about* the world, but it conveys no deep intimate acquaintance with that world. The knowledge of intuition is superior to this, thinks Bergson, for it gives us reality from the inside. By uniting ourselves with the eternal flow of reality, we discover it as it is within and for itself. This inner nature is incommutable in language—to be known it must be felt by each individual for himself and in himself. He may urge others to seek for his truth, but he cannot transmit it to them. Intuition is thus a "kind of intellectual sympathy, by which one places oneself within an object in order to coincide with what is unique in it, and consequently inexpressible."¹

Intellect analyses. Its analysis pictures the world as something static to be broken apart and viewed as if it were a great inert block of something without vitality or change. In truth, the real world is energy, change, vitality. Intellectualism first solidifies the surface aspect of reality, and then marks it off into neat blocks, somewhat as a chilling atmosphere may freeze the surface of a river. Beneath the surface, the main current sweeps on with its indomitable power to the sea. It is the vital energy (*élan vital*) beneath the composed surfaces of things and of ourselves, which gives the ever-flowing, ever-changing reality to their being.

The doctrine of intuitionism has not been confined to the field of metaphysics. Rousseau, protesting against the extreme intellectualism of his century, developed his theory of education on the belief that feeling is smothered within us in youth by the mass of instruction with which we are assaulted. During the earlier years, he held, the boy and girl should be

¹ Henri Bergson, *Introduction to Metaphysics*. Published by G. P. Putnam's Sons, New York, 1912.

"taught" nothing; they should be free to express and develop the feelings which arise within their own natures. The chief fields of expression for intuitionism, however, have been those of morals and religion. In ethics, intuitionism had its strongest support from philosophers of the eighteenth century—such men as the third Earl of Shaftesbury, Francis Hutcheson, Richard Price, and, in a measure, David Hume.¹ A fair sample of the moral intuitionists' thought of this period is presented in such a passage as the following from Price: It is "necessary that the rational principle, or the intellectual discernment of right and wrong, should be aided by instinctive determinations. The dictates of mere reason, being slow, and deliberate, would be otherwise much too weak. The condition in which we are placed renders many urgent passions necessary for us; and these cannot but often interfere with our sentiments of rectitude. Reason alone (imperfect as it is in us) is by no means sufficient to defend us against the danger to which, in such circumstances, we are exposed. Our Maker has, therefore, wisely provided remedies for its imperfections; . . . in contemplating the actions of moral agents, we have both a perception of the understanding, and a feeling of the heart."² Such an expression may be characteristic of the period in which Price was living, but the fundamental idea—the looking to intuitive feeling for moral guidance—is one which has reappeared in every age. The latest important expression is that of Bergson, who points out that there are two sources from which mankind draws its knowledge on matters moral and religious.³ The first of these is *tradition*; the second and higher, *intuition*. It is from direct apprehension that the major prophets of morals and religion derive their insight.

If we turn from ethics to religion, it is to find especially frequent and strong the insistence upon intuitive knowledge.

¹ For a brief account, cf. the author's *Ethics*, pp. 154 ff., 178 ff.

² Richard Price, *A Review of the Principal Questions in Morals*, Chapter II.

³ Henri Bergson, *Les deux sources de la morale et de la religion*.

Such, we are told, was the truth which inspired the great religious teachers, the saints, and the martyrs of the ages. Men are not persuaded to accept the eternal truths of religion either solely or primarily on the basis of rational argument. They grasp such truths by direct insight into their sublimity and reality, and they embrace those truths on faith. It was to this insight that the great religious figures—both Jesus and such others as Buddha—appealed. They did not devote themselves to reasoned demonstrations of their conclusions. They saw the truth illumined by the strong white light of the inner sight, with a clarity which left no shadow of doubt or uncertainty—and they *proclaimed* that truth, believing that others, too, might *see*. Intuitionism is not the same as mysticism, for the latter is a definite metaphysical doctrine, while the former has to do with a way of attaining knowledge. Yet the two are closely related—it is through intuition that the mystic attains his vision of reality. Plotinus (204?–270? A.D.), greatest of Greek mystics, wrote: “To see and to have seen that vision is reason no longer. It is more than reason, and after reason, as also is the vision which is seen. And perhaps we should not here speak of *sight*; for that which is seen—if we must needs speak of seer and seen as two and not one—is not discerned by the seer, nor perceived by him *as a second thing*. . . . Therefore this vision is hard to tell of: for how can a man describe as other than himself that which, when he discerned it, seemed not other, but one with himself indeed?”¹

It would be an error, however, to suppose that intuition has importance only for a more mystical type of philosophy. In one sense, all reasoning and even all empirical conclusions involve its use. This was pointed out with respect to reason by Descartes. In any line of reasoning, it is necessary to immediately *see* the connection between one step in the argument and the next. The process of reasoning re-

¹ Plotinus, *Enneads*, VI, ix, 10. Cf. W. E. Hocking, *Types of Philosophy*, pp. 380–381. Bergson reveals the close relationship between intuition and mysticism in his *Les deux sources de la morale et de la religion*.

duces the intervening distance between the opening statement, or *premise*, and the final conclusion, to a number of smaller steps, somewhat as one might place stepping-stones in a stream too broad to be crossed by a single leap. But the stones can never be placed so close to one another that one may cross the stream without moving from one to the next. So, in a course of reasoning, the steps may be reduced, but they cannot be eliminated. One must be able to recognize the connections and pass from one to the next step. This must be by immediate apprehension—by intuition. Also, the inherent validity of rational thinking, and its superiority to irrational conscious processes, must be directly *seen*—it cannot be proven, for proof would involve reasoning, the very validity of which is the point at issue.

A further instance of intuitional knowledge may appear in our recognition of values. We do not ordinarily apprehend the beauty of a picture, a symphony, a landscape, or a human being by reasoning to the conclusion that they are beautiful. Nor do we reach the conclusion by putting together past experiences. The beauty is *seen* directly. So it may be with the goodness of a purpose or act, the truth of an axiom, or the fundamental worth of a personality which we admire or love. Any process of reasoning must start with some first intuitive truth or truths which are simply accepted because they appear obvious. Intuition of this latter order it would seem that we do and must all accept. Indeed, we may even go farther and, like Santayana, we may say, if we will, that our every-day experiences of objects in the environment around us are directly and so in a sense intuitively recognized. And it would be folly for any philosopher to object to geometry because of its axioms, or to art because its expressions of beauty are not in the form of syllogisms of logic. It is not to intuition in this sense that anyone does object, but to the separation and elevation of intuition above reason and experience. There are true and there are false conclusions urged upon us in the name of intuition. Frequently, as in the fields of morals and religion, these

intuitions contradict one another. Hence *choice* becomes necessary. If the intuitive insight is a true one, it should bear the tests of reason and of experience. The inventor may quite suddenly grasp the idea of a new mechanical device. The test of his idea will come with the actual use of the device. The philosopher may quite suddenly recognize a new form of systematic explanation. Its test will come with reason's critical examination of its assumptions and development. Are not moral, æsthetic, and religious intuitions subject to similar tests of reason and experience? Indeed, one cannot but reflect that intuition is not itself as separate from experience and from thought as the intuitionist believes in emphasizing its preëminence, when one remembers the truth of the observation often mentioned by its critics. "Poetic inspirations come, in anything like finished form, only to persons who have read poetry, studied it, and attempted to produce it; mathematical inspirations come to mathematicians only; musical inspirations come to musicians only."¹

¹ G. A. Coe, *Psychology of Religion*, p. 273. Quoted also by Durant Drake, *Invitation to Philosophy*, p. 31.

For references to literature having to do with the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER XV

KNOWLEDGE AND TRUTH (Continued)

I. EMPIRICISM AND RATIONALISM

An *opinion* may or may not be true—it is *opinion* because it has not yet been fully substantiated, or perhaps not even critically examined. *Knowledge*, on the other hand, is thought, the truth of which has been established. But how can the truth of any conclusion actually be established? And what is meant by *truth*? We have seen that the thoroughgoing sceptic regards all conclusions with respect to the external world as being highly problematic and dubious—there is no knowledge, but only opinion, he asserts. As far as knowledge of things themselves is concerned, we have seen, too, that the phenomenalist agrees with this assertion. Yet for him truth is not a meaningless term. *Within* the world of human experience it has a genuine significance, referring as it does there to the *consistent* behavior, the regularity and order of phenomenal existence. Pragmatism, in turn, with scepticism, denies the possibility of any absolute knowledge with respect to the external world (or anything else whatsoever). Yet certain ideas in the history of the individual and of the race have been found consistently to be of service—to meet human needs, both physical and spiritual. These ideas it regards as true, not eternally, but as long as they continue to be serviceable. Here, clearly, a somewhat different meaning of truth is presented than that which the sceptic wishes to deny, or that of systems which place their primary confidence in reason. It is apparent, then, that our problem—namely, the nature and possibility of genuine knowledge—presents two fundamental questions: (1) By what means, if any, may knowledge be attained? (2) What differentiating characteristic separates

knowledge from mere opinion, or, in other words, what is to be meant by *truth*?

In answer to the first inquiry, two classic theories have been urged: one, that of *empiricism*, which holds that knowledge is to be attained only from *experience*; second, that of *rationalism*, which maintains that *rational thought* is the source of real knowledge. From the time of the empiricist, Bacon, and the rationalist, Descartes, on to about the end of the eighteenth century, the opposition of empiricism and rationalism presented a dominant issue in philosophical thought. Are there ideas which do not come directly from experience, but arise from the nature of the mind itself? To this, the empiricist responded with a decisive *No*, *there are no such "innate ideas" implanted within us from birth*. Thus John Locke, probably the most influential of British empiricists, wrote: "It is an established opinion amongst some men, that there are in the understanding certain innate principles; some primary notions, . . . characters, as it were, stamped upon the mind of man, which the soul receives in its very first being; and brings into the world with it. It would be sufficient to convince unprejudiced readers of the falseness of this supposition, if I should only shew . . . how men, barely by the use of their natural faculties, may attain to all the knowledge they have, without the help of innate impressions; and may arrive at certainty without any such original notions or principles. . . . There is nothing more commonly taken for granted, than that there are certain principles, both speculative and practical (for they speak of both) universally agreed upon by all mankind: which therefore, they argue, must needs be constant impressions, which the souls of men receive in their first beings, and which they bring into the world with them, as necessarily and really as they do any of their inherent faculties. This argument . . . has this misfortune in it, that if it were true in matter of fact, that there were certain truths, wherein all mankind agreed, it would not prove them *innate*. . . . But, which is worse, this argument of universal consent, which is made use of to

prove innate principles, seems to me a demonstration that there are none such; because there are none to which all mankind give an universal assent. . . . If children and idiots have souls, have minds, with those impressions upon them, they must unavoidably perceive them, and necessarily know and assent to these truths: which since they do not, it is evident that there are no such impressions. For if they are not notions naturally imprinted, how can they be innate? and if they are notions imprinted, how can they be unknown? To say a notion is imprinted on the mind, and yet at the same time to say that the mind is ignorant of it, and never yet took notice of it, is to make this impression nothing.

“The senses at first let in particular ideas, and furnish the yet empty cabinet; and the mind by degrees growing familiar with some of them, they are lodged in the memory, and names got to them. Afterwards the mind, proceeding farther, abstracts them, and by degrees learns the use of general names. In this manner the mind comes to be furnished with ideas and language, the materials about which to exercise its discursive faculty: and the use of reason becomes daily more visible, as these materials, that give it employment, increase.”¹ Later in the *Essay*, Locke again and more fully presents his own uncompromising view that all knowledge is from experience—the mind when born is but as an empty cabinet, or a blank sheet of paper. “Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas; how comes it to be furnished? Whence comes it by that vast store which the busy and boundless fancy of man has painted on it, with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, experience; in all that our knowledge is founded, and from that it ultimately derives itself. Our observation employed either about external sensible objects, or about the internal operations of our minds, perceived and reflected on by ourselves, is that

¹ John Locke, *Essay concerning Human Understanding*, Book I, Chapter 1. Cf. also Chapter II, Sections 1-4, 13; Chapter III, Sections 8-11.

which supplies our understandings with all the materials of thinking."¹ Thus, while Locke credits all knowledge to experience, he differentiates two types of experience: that of *sensation*, by which impressions are received through the body from the external world, and that of *reflection*, by which the mind experiences its own activities, in organizing material formerly derived through the senses. The attempt was made by his followers to explain all mental processes as merely transformed sensations, thus reducing understanding in its entirety to a kind of sensing activity. Important among these was the French philosopher Condillac (1715-1780), who likened the mind to a blank tablet on which experience leaves its imprints. Condillac argued that a being endowed with but a single sense, e.g., *smell*, might develop by it, nevertheless, such mental powers as desire, will, feeling of pleasure and pain, memory, attention, and comparison. If the idea of externality and of an external world were to be gained, however, it would be necessary that such a being also possess the sensations of *touch*. The *self* is nothing but the sum of present and past sensations.² This general view that all knowledge comes from sensations, known as *Sensualism* or *Sensationalism*, won popularity both in France and England, and came to number among its followers such men of prominence as Hartley, Priestley, Erasmus Darwin, James Mill, Jeremy Bentham, Helvetius, Destutt de Tracy, Condorcet, Cabanis, and the materialists.³

It was not long after such extreme sensationalists as Condillac that the school which accepted his general view—that the mind is passive, and like a blank tablet, is engraved by sense experiences—began to modify this view.⁴ It was

¹ *Ibid.*, Book II, Chapter I.

² Étienne de Condillac, *Traité des sensations*.

³ Cf. W. B. Pillsbury, *The History of Psychology*, pp. 75-81 and Chapter V; G. Boas, *French Philosophies of the Romantic Period*, Chapter II; H. Hoffding, *A History of Modern Philosophy*, Vol. I, pp. 382 ff.; F. Thilly, *A History of Philosophy*, pp. 329 ff., and, of course, the writings of these men themselves.

⁴ The school known as that of *Ideology*. Cf. L. Levy-Bruhl, *History of Modern Philosophy in France*, pp. 303 ff.; G. Boas, *French Philosophies of the Romantic Period*, Chapter II.

seen that such an account is inadequate because it fails to take account of any *activity* on the part of the mind itself in having or organizing its experiences. There are such active elements as conscious effort and will to be accounted for, and no account of the mind can be satisfactory which fails to accord to these their full importance. The mind is no "mere mosaic of passively received sensations." "All mankind knows," said Laromiguiere, one of the first in the movement to emphasize this active element, "and cannot not know, that there is a difference between seeing and looking, between listening and hearing; it knows, in other words, that we are now passive, now active, that the soul is by turns passive and active." This emphasis on the activity of mind was extended further by the influential French philosopher, *Maine de Biran*, who maintained that it is *effort* required of us in order to achieve our purposes in action, which gives us the idea of an *external* world. Sensations may come when the mind is passive—"it is evident that (one) exerts no power on the modification, that one has no means at hand either to interrupt or to change it." On the other hand, it is not so with voluntary movements: "It is in truth *I* who create my modification, I can begin it, suspend it, vary it in every way, and the consciousness that I have of my activity is for me as evident as the modification itself."¹ This activity on the part of the mind cannot be denied, and an empirical philosophy which goes to the extreme of neglecting it cannot be expected to survive.

A similar development from sensationalism occurred in England, reaching its climax in the thought of *David Hume*.² Empiricism in England had never gone to the extremes, however, which it reached with certain of the Ideologists in France. Even Locke had claimed to know what can never be proved by direct observation or even shown by legitimate inference from what has been directly observed—namely, the

¹ *Maine de Biran*, "Habitude," *Oeuvres* (edited by Tisserand), II, 20, 21. Quoted by Boas, *French Philosophies of the Romantic Period*, p. 45.

² For further discussion of Hume, cf. pp. 131 ff., 203 ff.

existence of an external world of material objects. On his own principles, Locke has no basis for the assertion of such objects—as Professor Fullerton has remarked: “He has stolen his world, so to speak; he has taken it by violence.” Or, otherwise stated, he has actually employed the principles of reason in order to secure this “knowledge”—and may be charged at least to that extent with departing from pure empiricism. But the departure is not a premeditated one—Locke desired and meant to be a thoroughgoing empiricist. His major critic, Berkeley, also an empiricist,¹ was more consistent, denying matter on the grounds that experience gives us no basis for asserting its reality—we know only ideas and a mind which perceives the ideas, so far as experience carries us. If more is to be assumed, it must be on rationalistic, but not on empirical, grounds. Hume, as we have seen in an earlier discussion of his view of substance, pointed out that the error which Berkeley demonstrated in Locke’s slipping into rationalistic assumptions, may be charged likewise to Berkeley himself. Was not he too assuming that ideas require a mind or thinking substance as their cause? We discover no such cause in our experience; its presence is but a rationalistic assumption. The mind is its ideas, and that is the end of the matter. But no, there is something more to the mind. There also are certain forms of association by which the ideas are combined.

Perceptions, said Hume, are the given material from which all mental activities must start. These are of two kinds, *impressions* and *ideas*. The two are alike except that impressions possess a strength and liveliness which ideas lack. Since causality has been shown to be but a form of the mind’s organization of its contents, we need not ask the cause of impressions coming to us, or assume that external objects must exist to produce impressions on us. The impressions appear, and that is the end of the problem. Ideas, on the other hand, arise from impressions. Memory and imagination are but names for forms in which the ideas sometimes

¹ For further discussion of Berkeley, cf. pp. 115 ff.

occur. Experience shows us further that there are forms of association by which impressions and ideas become connected with each other in the order of our thinking. These, we have seen, are: (1) *Resemblance*, (2) *Contiguity* in space and time, and (3) *Cause* and *effect*. Every impression is clearly distinct from every other. But in experience, we find our ideas related to one another as ideas of objects or events which have certain points of similarity—as the ideas or impressions of two chairs, tables, houses, or theories. We further connect impressions and ideas as having to do with that which is spatially or temporally related—as nearer or farther, before or after. And again, we discover the connections of cause and effect—one thing, as we think of it, seems to be related to another as its cause or its effect. Despite their importance for his description of mental life, Hume does not attempt to explain these principles of association, or to say *why* they appear in thought. He finds in experience that actually they do appear and are the forms of organization in all mental activity. Why this is so is a question which experience cannot answer, hence it is a question which cannot be answered. Nevertheless, despite this refusal to be drawn into rationalistic explanation, the recognition of these forms is of the greatest importance. For it represents the admission on the part of empiricism of the mind's own contribution to its experiences. For Hume, and obviously enough, the forms by which the content of experience is organized in meaningful ways, to represent logical, moral, aesthetic, or utilitarian *connections* between things—organized to serve human purposes and express human desires—could not be in the individual ideas as separate beings. Such connections must stand as the mind's way of putting its experience together. They are not themselves products of experience, for experience cannot exist as an organized or personal thing without them. They must be present as capacities which each of us already possesses when we organize the crude sensations given to us for the first time, into unified experiences, having meaning or value for us.

It is unnecessary for us to trace in detail the developments which extreme rationalism took during its years of greatest importance. There were and continue to be many forms and degrees of philosophical rationalism. By its most thorough-going exponents, it was supposed that reason, unaided by observation and sense-experience, can discover truth for itself. Of greatest importance to its adherents usually was the belief that this doctrine gave strength to moral and religious truth. If such truth arises, not from human experience, but from the activities of pure reason, it seemed to them the more irrefutable. Our senses deceive us repeatedly —hence, we must look upon all their evidence as uncertain. About matters of experience, we differ. What is regarded in one way by a particular individual may appear quite differently to another. But if pure reason gives us knowledge, then will not the reason of all men agree, so far as they exercise that reason with care to avoid error? Where in our experience can we find such unanimity of agreement about facts of experience as we do find about the truths of mathematics which are and must be reached only by the exercise of pure reason?

It was from this quality of certainty, which seems to attach itself in a unique way to mathematical demonstration, that Descartes was led to adopt a similar rationalistic method in philosophy. The same influence, the success of pure reason in mathematical demonstration, led Spinoza likewise to attempt its use in philosophical matters.¹ But to later thinkers, Descartes' axiomatic first principles appeared to be by no means clear and distinct truths; to many they appeared doubtful, and to others, mere philosophical prejudices. Spinoza's courageous attempt to derive the whole world of experience from the two attributes of God—*thought* and *extension*—and his argument for a single substance, since they rested finally on a concept of causation which has since

¹ For discussion of Descartes' attempt to build from clear and distinct axiomatic truths by reason, cf. Chapter V; for discussion of Spinoza's argument, cf. Chapter VI.

fallen into disrepute, have lost the certainty which he found in them. The difficulty which extreme rationalism has always faced is that of securing *content* for its thought. There must be a starting point from which reason can set out, and there must be something to reason about. Reason, taken by itself apart from experience, can provide neither for itself. The rationalist could secure his starting point only by introducing *self-evident first truths*, which he believed that his reason could not but accept. Whereas, in fact, that which appeared self-evident too frequently did so, not because of any actual indubitable certainty in its nature, but because familiarity or prejudice or the views and common assumptions of the age made it appear unquestionable.

By its nature, knowledge possesses two aspects—form and content. Pure rationalism devoted its attention wholly to the former, as pure empiricism devoted itself wholly to the latter. It was not so much in what each said positively that both failed, but in what they neglected. Form without content is empty, and content without form is chaotic. Knowledge is neither empty nor chaotic, but content organized in relations which have meaning and value for the knower. When one knows, one knows something quite definite, and one knows that thing not as an altogether disconnected item, but in relationships to other things, and to one's interests and purposes. A football game requires players, and also it requires rules which establish a meaningful order for the movements of the players. A drama requires actors, and no less, it requires a meaningful order for their parts. Similarly, if there is to be knowledge, that knowledge must have content derived from experience, and no less, it must have an order in the arrangement of this content which the particular items of experience do not themselves provide. Investigation, experiment, observation in all its varied forms, provides content; the mind itself must provide the order for its meaningful organization. That which comes to us through experience is frequently designated as the *a posteriori*; that which comes as an element contributed by the mind itself,

as the *a priori*. The two are not opposed, but complementary elements, which together constitute the *organization of content* which is *knowledge*. Not only do we organize by *a priori* principles the material which comes to us *a posteriori*, from the senses, but further, having organized this material, we repeatedly formulate general rules and principles on the assumption that what has been found to be true probably will continue to be so in the case of future experiences. These rules and principles, derived from experience, we then apply to new particular situations. Thus generalizations from past experience continually guide us as if they were at least in a relative sense *a priori* in further investigations. From such considerations, we have learned that neither empiricism nor rationalism, in itself, can be a road to knowledge. Neither can profitably be divorced altogether from the other. The only question remaining, but it is a large and important question, is that of which shall be emphasized. How far is either to be trusted? How may they be united in a way to give promise of the most reliable results in the form of knowledge? In philosophy of the present day, realism, like pragmatism, is inclined to place definite emphasis on the empirical, while idealism prefers rather to emphasize the rational approach to truth. But before considering these contemporary attitudes, we must raise the question earlier referred to, as to what is to be meant by *truth*. If we are to ask how one may best gain knowledge, we must determine what knowledge is. And if we agree that knowledge is thought which is true, we must decide what is to be meant by truth. Already we have seen that pragmatism regards the truth of an idea or theory as meaning that this idea or theory *satisfies a human need*. But there are other views to be considered, two in number: the *correspondence theory* and the *coherence theory* of truth.

II. WHAT IS TRUTH?

It is a familiar fact that for the sciences as for the human individual, consciousness precedes self-consciousness. We

"know" many things before it occurs to us to ask *how* we know these things, or how we may make certain that our supposed "knowledge" really is *true*, or what actually is meant by *truth*. Likewise, it is when a science has reached a fairly high state of development that it turns from its investigations of its subject-matter to examine critically its assumptions, concepts, and methods. There must be *knowledge* before a theory of knowledge can be developed. Thus in the history of philosophy a long period of fruitful investigation preceded the sophists, who first raised seriously the general questions of human knowledge—questions dealt with further by Socrates, Plato, and Aristotle. With the last, they led to development of Aristotelic logic, which Windelband has well described as "the culmination of the self-consciousness of Greek science." In it, Greek science looked squarely at its own methods, at the rational *forms* of thought in which it was organizing its material, and by which it was formulating its conclusions. Those conclusions could be no more valid than the procedure by which they were reached. The more naïve investigator may not realize this; he may be quite ready to take for granted the soundness of methods with which he is familiar. The more sophisticated inquirer recognizes the fundamental importance of subjecting his methods, his assumptions, his standards, and his own capacity to deal with the problem in question to rigorous critical examination. Thus in the order of *psychological* development, such questions as: What is to be meant by *truth*? or What is the criterion by which an idea is to be judged *true*?—come late. On the other hand, *logically* it is apparent that these questions are primary and should be considered at the very beginning of any investigation whatsoever. Fortunately for us, the long experience of the race and the toil of investigators through the centuries have provided a vast body of material with which we may work. With this heritage available from the outset, the student is in a position fairly early in his course of inquiry to consider fundamental critical questions having to do with the nature of knowledge itself.

I. Correspondence Theories.

"In common life," says Hegel, "*truth* means the agreement of an object with our conception of it."¹ Things in themselves are neither true nor false—they simply are or are not. Truth has to do with *our thoughts* about things. A meteor may or may not fall towards the earth—whether it does or does not has nothing to do with truth. But my idea of whether it falls or not is commonly thought to be true or false depending upon whether it actually agrees with the events which are transpiring in the external world. But just what does this mean? Are there not various ways in which an idea may be said to *agree* with its object?

To this, common opinion is likely to reply that an idea agrees with its object and is true when it is like, or an accurate copy of, that object. This view, known as the *copy theory*, has not been without its advocates from the ranks of the philosophers. But these advocates have been relatively few in number, for the naïveté and quite palpable shortcomings of the view render it unsatisfactory for a more critical thinker. These shortcomings easily may be pointed out. According to the copy theory, ideas are regarded as analogous in some way to photographic reproductions of their objects. They are to be judged as true or false on the grounds that they do or do not give to the mind a faithful copy of the objects which they represent. One's idea of a tree or house or mountain is to be considered *true* in so far as it copies accurately, or is like, the *real* tree, house, or mountain which exists in the external world. But this suggests many difficulties, some altogether obvious. For example, is it not a fact that we cannot know what is the nature and appearance of objects as they are in themselves? We know them as they appear to us, and we cannot escape from ourselves in order to know them in any other or more real way. Hence there is no possible means by which we may compare our ideas with the things or events in the external world. A standard of truth which requires such comparison is useless to us. We

¹ Hegel, *Logic*, Chapter II (translated by Wallace).

must perceive objects by means of our senses and think about them by means of our ways of thinking. In so far as our powers of perception are limited, what they convey to us of external objects must be limited accordingly. If all men were blind or deaf or without a sense of taste or touch, their ideas of the world would be markedly altered. If men possessed other ways of sensing than they actually do, objects probably would appear with qualities of which we have never dreamed. If we were much larger than we are, or much smaller, the size and appearance of things would be changed. If our senses of sight and hearing were much keener or more dull, or if the range of sounds and the area of vision were enlarged or diminished, our ideas of the world would vary correspondingly. But having the particular nature and limitations which we do possess, our senses give us impressions of the world in terms of this nature and circumscribed by these limitations. Also, as we have noted, since our thinking is determined always by definite capacities and ways of thought characteristic of human beings, an object can be thought about in terms of our ways of thinking, and no others. We cannot know an object or event as it is in itself, and we cannot compare that object with our ideas of it.

A further difficulty with the copy theory of truth arises from the fact that we have many ideas, the truth of which we need to discover, but which are not ideas of physical objects at all, and, indeed, which have no objects outside the realm of thought with which any direct comparison is conceivable. For example, there are our ideas of the meanings and values of things. When we say that one book, or play, or professional career, or business policy, or economic theory is better than another, our judgment presents an *interpretation*. We may compare this interpretation with what we take to be the judgment of other people, or we may test it by certain principles which we take to be valid in the particular field, or we may observe consequences of action based upon it, but obviously, there is no counterpart for

the interpretation itself in the external world, with which it may be compared. The interpretation is made on the basis of personal attitudes and interests, past experiences and future purposes, and of such things the external physical objects and events are destitute. A further illustration of this weakness of the copy theory in its more naïve form is to be found in mathematics. Nowhere do we seem to possess more certain knowledge than here, yet the concepts of mathematics are not physical objects, or copies of such. On the basis of the copy theory, therefore, mathematics might accept the truth of a belief in round squares quite as easily as in perfect circles or triangles. It is not necessary to point out further numerous difficulties presented by the copy theory of truth. A theory which never can be applied because it requires a comparison which human thought can never make and, further, which requires a comparison with objects which in many cases do not exist, need not detain us further.

Nevertheless, in some form, it seems that much may be said for the position that the truth of an idea depends upon some kind of correspondence with its object. The copy theory may be an expression of this larger *correspondence theory of truth*, but the latter must not be dismissed because of the difficulties found in this naïve form which frequently it takes in popular thought. The truth of an idea does seem to have some kind of intimate connection with what lies outside as its object. All ideas are not equally true, and something outside themselves seems to have a great deal to do with determining this fact. To say that a judgment is *thought to be* true does not appear to be equivalent to saying that it *is* true. Bertrand Russell illustrates this situation and suggests a conclusion typical of present-day thought. "It is to be observed," he says, "that the truth or falsehood of a belief always depends upon something which lies outside the belief itself. If I believe that Charles I. died on the scaffold, I believe truly, not because of any intrinsic quality of my belief, which could be discovered by merely examin-

ing the belief, but because of an historical event which happened two and a half centuries ago. If I believe that Charles I. died in bed, I believe falsely: no degree of vividness in my belief, or of care in arriving at it, prevents it from being false, again because of what happened long ago, and not because of any intrinsic property of my belief. Hence, although truth and falsehood are properties of beliefs, they are properties dependent upon the relations of my beliefs to other things, not upon any internal quality of the beliefs.”¹ In selecting an historical illustration, Russell has chosen well, because it is in relation to historical facts that the truth of our ideas most clearly demands *correspondence*. In such cases, however, it may be worth noting that, speaking exactly, it is not on the basis of correspondence with the actual past event that our ideas can be judged true or false, but rather on the basis of their correspondence with other people’s ideas of those events, that is, with common opinion and with records. If the records are false and the opinion misled, we cannot judge the truth of our ideas truly. In other words, the only means which we possess for judging the truth of any ideas regarding historical events is their consistency with available evidence—we cannot compare them with the events themselves. And if we look back to those who made the records, shall we be content to say that their ideas were *copies* of external happenings, despite the difficulties already mentioned in connection with the copy theory? It may be replied that their ideas were not photographic copies, but nevertheless they corresponded in some way to the events—the historical records of Charles I on a scaffold corresponded to an actual Charles on a real external scaffold. Not only must we remember, however, that the various ideas of various people that he was on a scaffold were all human formulations from sense impressions, but further, had one person at the time insisted that Charles died in bed, while many others saw him on the scaffold, we

¹ Bertrand Russell, *The Problems of Philosophy*, pp. 189–190. Published by Henry Holt and Company, New York, in the *Home University Library*.

should discredit the evidence of the one. If half of the records said he died in bed, the other half that he died on the scaffold, we should hold the matter an open question. If all but one said he died in bed, we again should accept the ideas of the majority. That is, in historical cases, *consistency* between the ideas of those who observed the event is the determining factor in what shall be regarded as *true*.

Further, there are other ideas than those about historical facts which need to be judged true or false. For example, there are judgments about natural laws and about mathematical propositions. Such judgments have to do with the *universal* order of things. At most correspondence could only show us that in *particular* cases these laws or propositions hold *as if* true. It could never tell us that as *universal* laws or propositions they *are true*. We may be justified, of course, in assuming their truth for purposes of use or further investigation, and if they prove satisfactory, we may come to regard them as true. But this is to make truth equivalent to utility in a broad sense; it is to employ the pragmatic and not the correspondence theory. *Correspondence* is a word with many possible meanings, and few who accept it as a criterion of truth tell us exactly which of these meanings is intended. But if, in any sense whatsoever, it refers to correspondence between an idea and an external *object in itself*, it is faced with the primary difficulties which appeared so clearly in the copy theory. There is no way of knowing such an *object in itself* if it be once divorced as something different from our knowledge of it, for then there can be no means for determining correspondence. For example, if I say that my idea of a house is true because I think of its characteristics, perhaps its windows, *as they are*, do I mean that my idea corresponds to the house itself, or to the house as it would appear to any human being looking at it? Commonly, of course, I mean the latter. In a certain gable, for instance, I see four windows where other people also see four windows—where anyone, indeed, may see four windows. I may verify this fact, and if I mean by the truth of

my idea that it agrees with what anyone would see, I may be satisfied that my idea is true. But if I mean that my idea corresponds, not alone with what others would see, but also with what that unknowable entity, the real house itself, actually is, obviously there is no way of determining correspondence.

Such considerations, however, assume a separation between ideas of the mind and the objects which they represent. On the basis of this assumption of separateness, correspondence must prove an inadequate and unusable theory of truth. But what if the assumption itself is erroneous? What if the mind and its objects are not separated? What if knowing simply means direct experience of that which is known? It is along this line of identification of mind with its objects that the new realism proceeds, and we must ask shortly whether by this route realism may reestablish the correspondence theory.

2. Coherence Theories.

The classic opponent of the general view that truth is to be described in terms of correspondence between idea and object, ordinarily is known as the *coherence theory*. Since we never may hope to compare our ideas directly with their external objects, a standard for truth must be found within the realm of thought itself, if the term is to mean anything or possess any value for us. In this, the coherence theory is in agreement with the pragmatic. But whereas the latter looks to the consequences of ideas, methods, and theories, judging their truth by the values which they are able to produce for us, the coherence theory places its trust in the *harmony* of thought. No impression or idea, standing by itself, in isolation from all other impressions and ideas, can mean anything to us. Since, as independent, it could not also be related or compared with anything, there would be no way in which its truth or falsity could be determined. In fact, however, the mind does not possess simply a number of such ideas. The very act of knowing is a relating

activity. Each new impression or idea is related, in becoming known, to a system of thought which is already established in our minds. If any new idea fails to display points of relationship with this present system of thought, it remains a weak and doubtful idea, with little meaning, or is soon forgotten. Ideas, on the other hand, which have many relationships to what is known already, possess a strength and significance for us. To the biological chemist, a new discovery regarding the nature of enzymes may seem of greatest interest and importance; to his gardener, it might seem of next to no interest, and except for courtesy to his employer, it would be declared of no importance whatsoever. Were Einstein to explain the difficult formulæ underlying the theory of relativity to the brick-layers' union, the result could be little more than mystification—it might be utter boredom or ridicule. The same address, delivered to a meeting of the mathematical association might well seem to the audience to be of the most momentous significance. The difference in such cases would not lie in the bare sense impressions of the two groups of listeners, but in the nature of their established systems of thought, to which the new ideas were to be related.

Is it not a fact, the advocate of the coherence theory asks, that we ordinarily do judge any idea to be true or false on the grounds that it is or is not consistent with what we already know and think? If some new idea is presented which is in harmony with past experience, we accept it with slight questioning. If, in a strange locality, we set out for a walk and come shortly upon a stream the waters of which clearly are moving down hill, we do not question the truth of our impressions. But if the waters appear to be moving up hill, as occasionally happens, we decide that here is some kind of illusion—for no other reason than that past experience of ourselves and of other people shows consistently that water flows downward. On similar grounds of consistency in experience, the intelligent man would dismiss the appearances of ghosts, witches, or hobgoblins. In-

deed, there is scarcely a purposeful action, even so simple a one as being seated in a chair or reaching for a book, which does not rely upon the consistency of experience—what has happened consistently in the past may be expected to happen again if proper conditions are present. On this same ground, impressions and ideas, whether pleasant or unpleasant, which fit consistently into the systematic order of our thought and experience are accepted as true; those antagonistic to this established order are rejected as false. Truth means, for human beings, the harmony or consistency with which an idea may be related in thought. There may be exceptions, in the form of epochal ideas, which will not fit, yet which impress us so strongly with their truth that the whole system of our thinking is rearranged in order to harmonize with them. Such was the Copernican conception of the world as a planet moving about the sun, or the Newtonian conception of gravitation, or the biological theory of evolution, or the atomic theory of matter, or the democratic theory of government, or the Christian view of human relations. But such exceptions do not harm the theory of coherence, not alone because they are rare, which really would make no difference, but because these new ideas are not accepted *despite* the fact that they are out of harmony with men's established systems of thinking. They are accepted because they suggest some new and more harmonious way in which that thought may be organized. We are not omniscient, and neither is our thought altogether consistent. Its inconsistencies irk and annoy us. When a new order of arrangement is suggested which will relieve certain of these inconsistencies, we accept it.

The advocates of the coherence theory point to the work of the sciences as evidence in support of their view. An obstinate fact which cannot be incorporated harmoniously in the consistent scheme of scientific explanation is not merely left as something which does not fit. The scientist is not content until some new description has been found which will show its harmony with other facts. Logical con-

sistency is an absolute demand of scientific explanation. That which cannot be incorporated harmoniously within a systematic explanation is either in some way a false datum, or else it is evidence of the inadequacy of the system of scientific thought itself. Particularly in the use of the principle of *parsimony* do the sciences employ the coherence theory.¹ No appeal to correspondence can tell us that of two otherwise equally satisfactory explanations, the more simple is to be preferred. In adopting this principle, reliance is placed squarely upon consistency, or harmony. Further, in scientific verification, "the experienced facts appealed to in verification of a suggested law or theory must be such as can be experienced in the same way by any observer with normal sense organs and nerve structure. If evidence we take as confirmatory of our explanation does not present itself, as such under appropriate conditions to other competent investigators, we should hold the evidence dubious, and its verification incomplete." With Professor Burtt's clear statement, all scientists would agree. But is not this to say that scientific verification relies not only upon harmony of a new idea with the systematic whole of the *individual's* experience, but also that it relies upon coherence in the thought of a *social group*—namely, the group of all competent investigators?

However, the coherence theory is not without its severe critics. It has been urged that coherence gives only a *formal* criterion of truth. Truths cohere, but do not errors also cohere? For do not *all* psychic processes tend to fit together? This, Professor Schiller points out, is "because the human mind has achieved a considerable degree of unity, and so incoherence, when it is noticed, jars upon it and feels unpleasant. We try therefore to avoid it. . . . Beliefs tend in consequence to conglomerate, and to form systems which have considerable power to assimilate what fits in with them and to extrude what does not. But all this is quite irrespec-

¹ Cf. p. 25. Also cf. E. A. Burtt, *Principles and Problems of Right Thinking* (revised edition). Chapter XV.

tive of the truth or falsity of our beliefs. It does not serve to discriminate coherent truth from coherent error. Hence the coherence test fails in the primary function of a test of truth.¹ Is this criticism sound? Do errors actually fit together harmoniously? If *all* of one's ideas were mistakes, would it be possible to organize them together into as consistent an account of the world as if all were true? Would as great harmony be possible in a society where every member always lied to and stole from every other, as where men are truthful and honest? If it be objected that this brings in the pragmatic test of "satisfactoriness"—may it not still be answered that satisfaction requires some ground? Is it not the consistency of truth which constitutes that ground? Any apparent harmony between errors must be localized—errors may fit together harmoniously if isolated from other parts of experience, but the moment they are incorporated in experience as a whole, their real character is likely to become apparent. As two mistakes may support one another, so errors may seem to cohere, but if the relationships are extended, the point is soon reached at which their inconsistency with the larger area of experience becomes clear. It is a fact, of course, that there may be two or more diverse, or even antagonistic systems, equally consistent within themselves, as has been shown in the case of geometrical systems. In such instances, both are true *as systems of reasoning*. Which is more true in some other sense, such as *true for experience*, will have to be determined again by consistency, but consistency of the systems as a whole with what is *outside* those systems, namely, the totality of our experience. It may be said, however, that coherence of ideas is a psychological matter. A mind may find harmony between certain of its ideas, and cast out others which another mind might find quite coherent with its experiences. Since no human mind embraces the whole of experience or possible experience, each works but with a fragment of knowledge,

¹ F. C. S. Schiller, *Logic for Use*, p. 138. Published by Harcourt, Brace and Company, New York, 1930.

and such differences are to be expected. They may be in considerable part corrected by the means employed by the sciences and by ordinary thought, that is, by an appeal to the experience of others. Here again, consistency is taken as the test. It is assumed that the whole of reality and the whole of knowledge about reality must be consistent—that which is real cannot be self-contradictory. In the case of the sciences, it is assumed that the findings of one, when fully understood, will not contradict those of another. If such contradictions appear, it is believed that they are due to insufficient knowledge on the side of one or the other or of both sciences at the time. The real body of knowledge which each in its own way is seeking to acquire is unified and coherent. This is an assumption, all must admit, but is it a justifiable assumption? If the world of reality is an harmoniously unified order, it follows that true knowledge of that world likewise will be systematically consistent. And in the case of any new or doubtful idea, a test of its truth may well be the consistent manner with which it fits with the order of experience as a whole, in so far as it has become established in our thought. Errors, indeed, may be made, but no guarantee is offered that there can be no mistakes in *applications* of the coherence theory.

III. REALISTIC VIEWS OF KNOWLEDGE

Only a very long and complex discussion could do justice to the diverse views of knowledge which have been advanced in the name of realism. Here we may speak in only the most summary terms. As the name implies, realism in general is an account of knowledge which affirms that the real world can be known. It is hostile to any emphasis upon the part played by the mind in the shaping of knowledge whenever that emphasis becomes so strong as to suggest that our ways of thinking, our interests or ideals need necessarily prevent our gaining true knowledge of facts. The facts must be allowed to speak for themselves. If they show order and uniformity in the world, let it be so; if they disclose irregu-

larities, discord, antagonism—again, let it be so. Frequently the realist is a pluralist. He finds systems of logical, of moral, of utilitarian and of various other types of relations, but these show to him no evidence of interdependence, or of belonging together within any *higher* order. Such systems and items belonging to them may all be considered and so related in a single realm of discourse by the thinker or speaker, but as for themselves, and their place in the real world, they are quite distinct and separate from one another. Actual observation shows the world not as one thing, or one kind of things, but as a great variety, composed of many things of many kinds. These things may be shown to be related in various ways by the sciences, but they are not unified in any one all-inclusive order. They are not to be understood through reliance upon any conceptual scheme, but by empirical methods. Nevertheless, the contemporary realist does not hesitate to employ rationalistic methods. To meet the logical attacks of idealism, he too, has developed a *logical* argument in support of his position.

The difficulty with phenomenism and with all forms of philosophy which find no escape from the ego-centric predicament, lies in the separation which they admit between mind and real objects. If such separation be granted, no correspondence, and so no truth, could be attained in ideas. That is, if we start by defining ideas and their objects as different in kind, we cannot also insist upon their being the same. But why should we start with such a definition? Is not the world directly revealed to our senses? If I look at a table, the table is *there*—or as most realists would say, it is *existentially* present to my senses. When I observe its shape, color, or hardness, I am not merely experiencing an idea of my own, or an intermediary entity of some kind: I am genuinely experiencing the table, and experiencing it directly through my senses. In perception, there is no question of belief, for I directly apprehend the qualities themselves as they are in their objective world. Later, when I may not apprehend the table directly, the question may

arise of whether it then does or does not exist, and on the basis of common sense there is no reason ordinarily to think that it ceases to exist when I cease to experience it, or, indeed, to suppose that it makes any difference whatsoever to the table whether it is being perceived or not. It will remain the same cold, white, oval object whether or not it is being experienced by any mind.

Do we know or experience the *whole* nature of objects? The reply, obviously, is *no*. For example, the sciences may tell us many things about objects which ordinary sense-experience cannot find there—as that they have an atomic structure. Yet the sciences never tell us of anything which *might* not be perceived, were our senses sufficiently keen. That is, scientific knowledge merely supplements that which our senses secure. But if we directly observe objects as they are objectively in the world, how can our *mistakes* about them be explained? The reply offered by some realists is that not all *sensa*, or that which is sensed, are real or actually belong to real objects. Only those are real which are clearly and distinctly apprehended under normal conditions by normal senses. Thus color-blindness would be a distorting abnormality in the senses of the observer, while illusions, as for example those due to a microscopic lens, might be due to peculiar conditions under which the object was viewed. Always sense “remains the ultimate authority.” While all realists agree that external objects exist independently of a perceiving mind, and while most modern realists insist that they are directly apprehended,¹ yet on the problem of error, and on the use of this explanation of real and unreal *sensa*, there is wider division of opinion.

Since the perception of an object does not affect the object, it seems to follow that the relation by which it is attached to the mind is external to it—that is, it does not change the inner nature of the thing known; it is merely something

¹ The chief exception would be certain members of the group of *Critical Realists* in America.

added on to that nature. We must not suppose, however, that the realist thinks of the external object as a material thing, for with Berkeley, the realist ordinarily maintains the error of such a view. It is true, he may hold that colors, sounds, and the other qualities which appear to be in objects, actually are *there* objectively, and are not products of *our* perceiving activities. Objects are groups of such qualities, and there is no reason to suppose anything in the object which cannot be sensed, or that could not be, were our senses sufficiently keen. The new realism, as Professor Perry suggests, "is in sympathy with the whole modern trend of thought (since Berkeley and Hume) toward identifying reality with the elements, processes, and systems of experience." Since objects are known directly, they can be known truly only as they actually enter into knowledge, that is, as knowledge is of *them* and not merely of ideas about them. If objects are known directly, what can be meant by saying that they are known truly? Knowledge actually is of objects, not merely of ideas about them. Hence to know truly would seem, at least for the New Realists, to be equivalent to having things in knowledge as they really are. Truth is defined by Professor Montague, for example, as *true knowledge*, and true knowledge is described as the having of things in one's experience directly and as they are in the external world.¹ While such a view is probably the most common among realistic thinkers, it must not be forgotten that it is by no means universally acceptable. Particularly to the very significant school of Critical Realists in America, it would not seem a valid account.² But almost any description which

¹ Cf. W. P. Montague, "A Realistic Theory of Truth and Error," in *The New Realism*, pp. 251-300 (edited by E. B. Holt).

² The writer regrets that it is impossible here to consider the various realistic positions independently. Critical Realism is dualistic, and hence pursues a course of explanation quite largely independent of that taken by most other realists. Intending no criticism by the statement, it must be said that it is therefore less thoroughly *realistic* in the sense in which the term is usually employed and in which it has been described here. For discussion of this position, cf. especially *Essays in Critical Realism* (edited by Durant Drake). The more advanced reader will gain large profit also from such books as G. Santayana's *The Realm of Essence*, A. O.

one might offer of contemporary realism could be but an account of what *some* realists think, for the term *realism* itself is so broad and general in its meaning as to include almost any theory of knowledge whatsoever if not further qualified. "The minimum of realism" Santayana has described as merely "the presumption that there is such a thing as knowledge; in other words, that perception and thought refer to some object not the mere experience of perceiving and thinking. The maximum of realism would be the assurance that everything ever perceived or thought of existed apart from apprehension and exactly in the form in which it is believed to exist: in other words, that perception and conception are always direct and literal revelations, and that there is no such thing as error. If this is the range of realism, I think we may say that any reasonable theory of knowledge . . . will occupy some point between these extremes, and will be more or less realistic."¹ It may be questioned whether there is any gain to be derived from using a term of such all-inclusive significance. But in actual practice, there is a narrowing of its use to at least the generally accepted view of realists, that external objects do not depend for their existence or nature on being perceived by a conscious mind. There is, in fact, a further point of general agreement among realists, namely, their protest against the view that all things belong to a single all-embracing Absolute system, a universal order, within which each has its being as a functioning part. Denying this, realists tend to emphasize empirical investigation, which starts with particular items of experience, and seeks to find in these such grounds of common relationship as may serve to unite them with other particulars, in any of the *various* relational systems which the universe seems to contain. These systems are not themselves united in any supreme or absolute

Lovejoy's *The Revolt against Dualism*, and R. W. Sellar's *The Philosophy of Physical Realism*. We may well beware of what the critics of this or any other contemporary position say that it says!

¹ G. Santayana, "Three Proofs of Realism," in *Essays in Critical Realism*, p. 163 (edited by Durant Drake). Published by Macmillan and Company, London, 1920.

system. "By the new logic," Professor Spaulding points out, "we may indeed accept one universe, but a universe that is one only in the sense that it is a *totality* of terms and individuals, both simple and complex, classes and series, states of affairs, existents, and subsistents, that are all *related*, though in different ways, and with *neither* one universal relation nor mediator of all relations."¹

IV. IDEALISTIC VIEWS OF KNOWLEDGE

Realism is a term which has to do primarily with the theory of knowledge. *Idealism*, on the other hand, denotes essentially a metaphysical attitude; a way of interpreting the nature of the world. It is an error, therefore, and one commonly made, to regard realism and idealism as fundamentally opposed to one another. Certain idealists may be opposed to the views of certain realists, but the positions as such emphasize different issues. Thus it is possible for one consistently to be an idealist with respect to metaphysics and a realist with respect to knowledge.² The actual opposition is between realism and phenomenism in the theory of knowledge, as it is between idealism and naturalism in the field of metaphysics. Here, idealism holds that reality is of the nature of mind. Naturalism maintains that all things, including minds, are to be explained in terms of the purposeless and quite mechanical processes of "nature." A very loose statement of the difference might be that idealism regards nature as in some way dependent upon mind, while naturalism regards mind as dependent upon and a product of natural processes. But taken in itself, such a statement would certainly lead to misunderstanding.

The idealist of course recognizes that the individual mind is intimately related to its organic body. Bodily illness or injury may bring about mental disturbances. Mental de-

¹ E. G. Spaulding, *The New Rationalism*, pp. 358-359. Published by Henry Holt and Company, New York, 1918.

² For example, J. M. E. McTaggart, Bernard Bosanquet, Norman Kemp Smith, and many other leading idealists have held a distinctly realistic theory of knowledge.

sires may bring about bodily effort and activity. Without sensations, an individual mind would have no content with which to work, and would remain empty and idle. And sensations are possible only through the physical activities of the body and presumably the physical stimulations of external objects. With all of this the idealist readily agrees. For the greater part, idealists would agree, too, that individual minds came into being at a point in the evolutionary process where a sufficiently complex sentient organism had arisen to make possible the activities of mental life. But why, they would ask, was nature able to produce these individual conscious minds by evolution or any other process? Could nature produce something fundamentally alien to herself? Could she put into her products what she herself in no measure or degree possessed? If nature could produce minds, must it not be because she possessed those characteristics with which she endowed them? Or, to speak less metaphorically, if human minds are actually parts of nature, must we not suppose that there is a likeness between the rational order which governs their thinking activities and the order which regulates nature in its other spheres or aspects? Furthermore, in thinking the mind must use its own rational principles of thought. But it must think about things, events, relationships in the external world. It must seek to understand, to predict, and to control those external objects and happenings. Can this be accomplished if the order by which thought operates is fundamentally a different order from that which regulates external nature? If the two orders were fundamentally divergent, how could anything in the physical world be known or predicted on the basis of thought about it? These are among the general considerations which lead the idealist to regard the order of thought, or mind, as the conscious expression of a rational order which pervades and regulates the whole realm of nature.

Mind, whether operative in a human individual or in the world of nature, he regards as essentially a name for rational

order. Hence the idealist has two forms of mind to deal with: (a) the conscious form in which it exists in a human individual; (b) the form in which it exists externally. With regard to the second of these forms, idealism offers two interpretations, one *subjective*, the other *objective*. The subjective idealist thinks of the external mind which constitutes the order of nature as being a conscious personal mind. Usually he designates it as *the Mind of God*. Under the influence of Berkeley, he is inclined to regard external nature as dependent upon this personal Mind of God. It is that Mind which serves as the source of all human stimulation, and so of all human experience of the external world. With this account of nature, the objective idealist differs, accepting a position nearer to that of the realist. For him Mind is an objective order in nature; it is the presence and regulating status of this order in nature which is the basis of intelligibility in the external world. External nature has a real existence which in no way depends upon its being perceived by any conscious mind whatsoever. We exist as parts of nature, having come upon the cosmic scene late in the evolutionary process. God may exist, but if so, the world of nature does not have its being solely in His consciousness. Nature is dependent upon Mind in the sense that the order which pervades and makes it what it is, is the same order which regulates the mental life of a conscious human being. Mind is the name for a rational order, then; we know it as it regulates the conscious activities of a human organism, and we know the world of nature as this same order regulates the activities and relationships of that world.

Objective idealism, it will be seen, thus agrees with realism in its central contention, the independent existence of the objective world (that is, its independence of the fact that it is or is not being perceived by a *conscious personal* mind). The relation of the subjective idealist is less clear.¹ Further, idealism agrees with realism, or more accurately, realism

¹On this point cf. S. Z. Hasan, *Realism*, p. 11. Published by the Cambridge Press, 1928.

has accepted the idealistic position, for the greater part, that the external world is not one of matter or any other *substance*, but is of such a character that it may be directly perceived and known by conscious minds. The primary difference between the new realist's and at least the objective idealist's view of knowledge arises from the latter's effort to go beyond more immediate systems and relations of things as we perceive them in experience, to a further conclusion which seems to him a necessary one. Nothing in our experience, he argues, is ever totally complete in itself. Every object and event is in relation to other objects and events, as every system which organizes part of the items of our experience must be related to other systems which organize other parts. Any particular thing or partial system, if removed from these other things to which it is related, will be incomplete; it will have "rough edges" on all sides. From this incompleteness and fragmentariness of all particular things, viewed in isolation from the rest of the world, it seems to the idealist that we must conclude that in reality all of these particulars *are fragments*. Together they constitute a world, and the order of that world is one order, an all-inclusive and complete order. Only that which is complete, he believes, is self-sustaining; all incomplete things are dependent on something beyond themselves. They derive their real nature and significance from the unity of which they are but parts. Similarly, the significance of all objects and events ultimately arises from the fact that they belong to the world. Their relationships to other things, therefore, are not purely *external*.¹ They bind each particular to other particulars as a fragment to the whole to which it belongs. A chip broken from a rare vase is useless; its significance came from its relations to the whole. A cog from a machine is but waste iron; its importance lay in its being a part within the machine.

With this view of the importance of its relationships to the nature of each particular thing before us, it is not diffi-

¹ Cf. pp. 158-162.

cult to see that each of these particulars may be known in two ways. It may be known as it is in itself, a particular. This is the kind of knowledge which we derive empirically in our contacts with the world, and it is the kind of knowledge which realism emphasizes. But if the real significance of things lies in their relations within larger wholes, they must be known also from the point of view of these wholes. One does not know the chip of pottery merely as a particular triangular bit of burnt clay, but also as a part of the vase. The fragment of design on its side is intelligible only as it is reunited with the larger design from which it was severed. This leads the idealist, not to deny the importance of empirical knowledge, but to insist that empirical knowledge in itself is incomplete. To be adequately interpreted it must be supplemented by conceptual or rational knowledge which grasps the relations of the detail or the particular to the whole or universal which it fragmentarily expresses. The difference here is one of emphasis and degree, but it is important nevertheless, and constitutes at present a genuine difference in the attitude taken by the realist and the idealist with respect to knowledge.¹

¹ For references to literature having to do with the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER XVI

HUMAN VALUES

I. VALUES AS A SUBJECT FOR STUDY

The basic error of more extreme forms of rationalism, no less than of empiricism, lies in the fact that they have assumed that man can view the world as a purely disinterested observer. The former has tended to regard his thinking as proceeding along the well-marked course of logic, quite free from influences of personal interest, interpretation, and ends. The latter has tended to regard experience as something ready-made, given to us by the world and accepted by us without organization and interpretation by us—in terms of our purposes and goals. In fact, of course, we are like neither thinking machines which do their work with dispassionate accuracy, nor post-boxes which passively receive whatever information may be deposited with them from an external world. The pragmatist has rendered great service by emphasizing the fact that as human beings we are faced with the problem of securing an adjustment between ourselves and the world which will be satisfactory to us. We learn to till the earth in order that our needs of hunger may be satisfied. To drain swamps or to irrigate the desert, to construct factories or to build means of transportation, to conquer disease or to organize political states—such activities have as their motivating purpose the securing of a more satisfactory adjustment between ourselves and the situations in which we are placed. To attain these results, we labor and we think. Thus a large part of our thought is devoted to the discovery of ways in which our purposes may be realized, and we desire the realization of these various purposes because it will contribute in some manner and degree to the satisfaction which we shall derive from a life

related on every side and inextricably to its environment. Placed in a physical world where some of the surrounding elements favor and others oppose our well-being, our obvious task is that of making life as *valuable* or as *worth living* as possible.

If we turn from the problem of satisfying physical wants to that of securing satisfaction of intellectual, moral, aesthetic, and religious needs which we find in our natures, the fundamental problem is not altered. It is the problem of how to satisfy these needs in the most valuable way, that is, the way which will add greatest worth to our living. However it may have come about, the human mind in fact is so constituted that it cannot be satisfied with mere recognition of the ceaseless flux of events which surround it. Always there is the demand to discover *meaning* in them and to control their course in ways which will be valuable. Even when the scientific investigator attempts to be altogether objective and impersonal in his inquiries, to devote himself to the discovery of facts, irrespective of any values which those facts may or may not possess—nevertheless, for him the inquiry itself and the very objective attitude which he assumes have, as their basic motive and reason for being, some value which such impersonal inquiry seems to promise. To study facts independently of their values is to study them for the sake of some value which such a study will have. Similarly, if one determines to think logically about any issue, and to be unaffected by any of his own interests or any cherished beliefs, nevertheless the logical thinking and the very determination to allow no value to divert that logic, themselves are accepted for the sake of some value which thinking in this way seems to promise. Thus ultimately the sciences exist as means for the realization of human values, though for the sake of better securing these values they may seek in their work to be altogether factual.

Although this is quite undeniable, it does not prevent a practical division of labor which shall separate *facts* and *values* as two independent realms for study. The natural

sciences have long been engaged with the former. Their results may have value for mankind. They may make possible new inventions, new ways of caring for or preventing disease, new avenues to efficient and economical production. If this occurs, it is well, but whether it occurs or not is by no means the chief consideration in the mind of the pure scientist. He is concerned with knowing the facts, whether such knowledge will have any value beyond itself. When the astronomer counts the stars which make up a "globular cluster" located several thousand light-years away from us, it scarcely can be with any sense of the general *utility* of his labors. The same might be said of no small part of the work of the mathematician, the physicist, the anthropologist, the biologist, or even the chemist. With the social sciences, the situation is somewhat different. If one would deal effectively with questions of politics, of economics, or of sociology, it is not easy to omit altogether the nature of the human beings who make up social aggregates. But where human beings are considered, it also is not easy to omit consideration of values. Indeed, economics, politics, and sociology are in part sciences of values. But they treat of particular kinds of values, not with the relations of those values to each life as a whole, or with questions as to what values really and ultimately are. Likewise, psychology is concerned with human experiences of values, but it is not concerned with inquiring what the significance of these experiences may be in revealing anything more than the psychological nature of the individual. That is, psychology is not concerned with such questions as the status of beauty, truth, goodness, or the other values which we experience. Hence, there would seem to be need for a study of values themselves, as there has been need for a study of facts themselves. As the sciences abstract factual material from the whole of our experience of the world, and seek to study this material in itself, so philosophy must turn its attention to the abstraction of values from our total experience, and an investigation of these values themselves. Values are at least as real and important,

a part of human experience as facts, and if that experience is to be understood, they must be subjected to no less careful investigation.

II. WHAT IS A VALUE?

Anything which might be said as to the nature of values would be quite incomprehensible to one who had not experienced values for himself. This would be equally true if one attempted to describe colors to one who had never beheld color, or music to one who had never heard sounds. The writer can do no more than attempt to analyze and point out what may not have been clearly noticed in the ordinary experience of each of us.

What is a value? This would seem to be the logical question with which to begin our inquiry. Unfortunately it is not an easy question to answer and the replies which have been offered do not altogether agree. This may seem surprising in view of the fact that each day we experience innumerable values and make a great number of judgments on the basis of values which in fact we recognize, and in not a few cases recognize so clearly and certainly that we feel no mistake is possible about them. For to regard anything as *beautiful*, or any conclusion as *true*, to think any action *better* than any other, or any attitude *more worthy* of respect than any other, to exert any effort to achieve an *end*, or to use or think anything *useful*, in short to *prefer anything* whatever to anything else, is to do so because of some value which one recognizes or believes that one recognizes in it. There is no basis other than superior value in some form for desiring anything, preferring anything, thinking anything rather than its opposite, or acting voluntarily in any way whatsoever. But as we find values in experience, they are in many forms. Some things seem good because they are useful, others because they are morally "right," or true, or beautiful, or pleasant. If we attempt to discover what all of these forms have in common, what it is in their nature which makes them all good and hence valuable, the task proves a complex one.

Three accounts which have been offered require our attention: (1) Value cannot be defined, but is immediately experienced; (2) Value "is the experience known as fulfillment of desire"; (3) Value is a recognition of harmony between the particular thing valued and the world order to which it belongs.

1. Value as Indefinable.

The view that *value is indefinable* usually arises from the belief that goodness, in whatever form it may be discovered, is not complex but simple. That is, one cannot take such a value as beauty or truth apart and say that it is made up of this, that, and the other constituent parts. Beauty is a single thing, an ultimate simple unit of experience, as are the other values. One does or does not experience a value, and that is all that may be said. If this is true, we may not *define* value, for this would require either that we state the parts of which it is composed or that we describe its nature in terms of something other than itself. If it has no parts, the first is impossible, and if it is a distinct and unique experience, the second equally is impossible.¹ When we say that something is good (or valuable) because it is beautiful or true or morally right, or useful, or pleasant, we do not define these values, but merely state that they are possessed by the thing.

The position that value is indefinable has been taken both by certain eminent realists and idealists, but to others of both schools it is not acceptable. Professor G. E. Moore of Cambridge University, one of the more eminent of British realists, insists that "If I am asked 'What is good?' my answer is that good is good, and that is the end of the matter. Or if I am asked 'How is good to be defined?' my answer is that it cannot be defined, and that is all I have to say about it. . . . My point is that 'good' is a simple notion, just as 'yellow' is a simple notion; that, just as you cannot, by any manner of means, explain to anyone who does not know it already, what yellow is, so you cannot explain what good

¹ Cf. Professor R. B. Perry's account of the meaning of a definition of value, in his *General Theory of Value*, p. 35 and footnote.

is . . . Definitions which describe the real nature of the object or notion denoted by a word, and which do not merely tell us what the word is used to mean, are only possible when the object or notion in question is something complex. You can give a definition of a horse, because a horse has many different properties and qualities, all of which you can enumerate. But when you have reduced a horse to his simplest terms, then you can no longer define those terms." ¹ "It would be absolutely meaningless," Moore points out, "to say that oranges were yellow, unless yellow did in the end mean just 'yellow' and nothing else whatever—unless it was absolutely indefinable." Similarly, Professor Wilbur Urban of Yale University, one of the most distinguished of American idealists, writes: "To say that ultimate values, *i.e.*, the good, the beautiful, and the true, are ultimately indefinable is to say that they are 'individual' concepts, and that their nature cannot be apprehended by such general propositions as form the material of natural science, more specifically in this case biological or psychological science. There is no higher genus to which to ascribe them as a species or as examples. There are no simples into which they may, as complexes, be analyzed." ² Professor Urban adds: "The indefinability of value means merely that we have to do here with one of the ultimate and underivable concepts with which we think or understand the world, and it shares this lack (of definition), if one wishes so to call it, with other concepts, such as being, existence, and reality." The primary significance of Urban's insisting that values are indefinable lies in the conclusion that, if indefinable, they cannot be reduced to the status of mere products of physical processes. A purely factual world which had no value in it could not produce the values which we experience. Nor can they be fully accounted for in terms of physiological activities which accompany our experiencing of them.

¹ G. E. Moore, *Principia Ethica*, Chapter I, pp. 6, 7. Published by the Cambridge University Press.

² W. L. Urban, *The Intelligible World*, p. 140.

But one other expression of the view that values are indefinable need be noted here, namely, that of George Santayana. This position is of interest for the reason that, despite Santayana's belief that values are themselves indefinable, he yet holds that our experience of them is dependent upon our *interest*. The value, for example, of pleasure is itself something which cannot be analyzed—it is known by being immediately experienced. But the pleasure which is enjoyed in any particular situation depends upon the nature and response of one who is in that situation. That is, though pleasure itself is something which cannot be analyzed, but is immediately experienced, the pleasure which I may derive from a picture or concert or anything else is dependent on *my* response to the external thing. Thus, though values are indefinable, they are to be identified with ourselves rather than with the external world. They arise spontaneously in our reactions to external things, and we tend to associate and think of them as attached to those things. "Values spring from the immediate and inexplicable reaction of vital impulse, and from the irrational part of *our* nature."

2. Value Defined in Terms of Interest.

A second position with reference to our problem, it has been suggested, is one which defines value as the *fulfillment of desire*. Looked at in this way, value is attached to anything and to all things in which we feel *interest*. The term *interest* is used in a broad sense, referring to the whole range of life which we commonly describe as "instinct, desire, feeling, will, and all their family of states, acts, and attitudes."¹ Thus Professor Perry defines value as "the peculiar relation between any interest and its object; or that special character of an object which consists in the fact that interest is taken in it." "Anything whatsoever acquires value when it is desired." At another point in his discussion, Perry states the meaning of interest as follows: "It is characteristic of liv-

¹ For discussion of this use of *interest*, cf. R. B. Perry, *General Theory of Value*, pp. 27 ff.

ing mind to be *for* some things and *against* others. . . . To be 'for' or 'against' is to view with favor or disfavor; it is a bias of the subject toward or away from. It implies . . . a tendency to create or conserve, or an opposite tendency to prevent or destroy. This duality appears in many forms, such as liking and disliking, desire and aversion, will and refusal, or seeking and avoiding."¹ It is precisely this characteristic or state or act or attitude of favor or disfavor, of being *for* or *against*, to which the name of *interest* is given. Professor Dewitt Parker of the University of Michigan, while differing from Professor Perry on important points, presents a fundamentally similar view. "Value," he says, "is the experience known as fulfillment of desire, or satisfaction. . . . When there is an idea of an object, there exists, implicitly or explicitly, a judgment regarding the object to the effect that it is *capable of serving desire*. The object then receives the predicate 'valuable,' or is said to 'have value.'"² Professor Parker suggests the interesting fact that our more primitive desires, such as hunger, are general, while our more complex desires, such as ambition or love, are specific. If a man is hungry, he does not dispute with the baker over which of several similar loaves of bread he wishes to eat. But if he loves, he will desire a particular woman for his wife. However, though a hungry man in anticipation may desire *any* loaf of bread, the loaf which actually he secures and finds satisfaction in eating must always be a definite one. But whether for the idea of bread in general or the existent loaf in particular, value depends upon someone's being interested in it. If all are "against" and no one is "for" bread, bread can have no value.

Furthermore, there are social interests to be considered. Each of us has his own interests, but in some cases these conflict and in others they harmonize with one another. A social act or a moral act must be judged as to its value from

¹ R. B. Perry, *General Theory of Value*, p. 115. Published by Longmans, Green and Company, New York, 1926.

² Dewitt Parker, *Human Values*, p. 409. Published by Harper and Brothers, New York, 1931.

the point of view of the harmony of various interests of all concerned. That is, a morally good act fulfills the desire or satisfies the interests of the larger number of those concerned.¹ The general position leads to numerous important questions and offers many possibilities for interesting treatment of details and possible forms of application, but these lie beyond the scope of our present discussion. Enough has been said to show at least the basic unity which this theory finds between the values which we seem to find in things, and the desires and interests which arise within ourselves.

3. Value as an Expression of Universal Harmony.

Any attempt to reach a conclusion through thought and any effort to achieve a purpose through action may be regarded as a sign of dissatisfaction felt toward one's present state of being. If one were completely content with his present knowledge, why would he think further? If one were altogether satisfied with life as it is, why would he endeavor to change anything or achieve any new purpose? Viewing his thought at any time, man finds it incomplete, and feels dissatisfaction with its fragmentariness. He exerts his efforts to think further, to grasp what still lies beyond his horizon of knowledge. Likewise, viewing his activities, he feels their incompleteness, and with this, the urge of possibilities still unrealized. These ideals and aspirations picture to his mind the person which he may become, the larger area of truth and accomplishment which he may yet include within the span of his life, the greater completeness which he may win. His possibilities exceed his present accomplishments, and it is these possibilities which stir within him a sense of values. He desires beauty because in it he realizes the harmony and perfection which his life does not possess. He desires truth because through it he feels a further harmony between himself and his environment. He turns to religion because

¹ Cf. R. B. Perry, *Present Philosophical Tendencies*, pp. 333 ff.; his *Moral Economy*, Chapters I, II, and V; his *General Theory of Value*, pp. 99-114.

Also, cf. Dewitt Parker, *Human Values*, Chapters I, X, and XI.

through it he hopes for communion and spiritual unity with a reality which transcends his passing experiences. He seeks to act morally because through moral action he discovers the soundest basis for unity with his fellows.

From man's sense of the limits that bind him, and the possibility of broadening those limits so as to overcome in larger degree the privations which they impose upon him, arise his efforts to think and act, to reach beyond himself, to achieve larger unity with his world. In the construction of a house, the value of each effort on the part of a carpenter may be measured best in terms of its contribution to completing the house, or in other words, to the realization of the unity which is being brought about between the various units of material. The value of the construction work as a whole comes from the unified structure which is to be the result. If a boy studies music, the value of his study is derived from that future unity of himself with music, so to speak, which shall result in his becoming its instrument. Without break or discord, music may some day flow through his violin to thrill a listening audience. It is from this possible unity that the drudgery of practice gains its value. Moreover, in gaining the power of perfect musical interpretation, the boy is not submerging but realizing and expressing his own nature most fully. For we can express ourselves only as we express something through ourselves.

Bare individuality has nothing to express; the empty individual is incapable of self-realization. He who knows no music cannot realize himself as a musician; nor he who knows nothing of construction, as a carpenter, nor he who knows nothing of physiology and medicine, as a physician. To realize oneself, then, is not to realize one's limitations and emptiness, but it is to realize through oneself a content—something which belongs to the world, but something also with which one has identified himself. Whether one seek to realize himself by achieving qualities of character and attainment which bring him into a fuller life of harmony with other men and with the world at large, or whether he seek this

fuller life through thought and understanding which brings his mind into closer unity with reality—in either of these cases, “interest” of course is present. But interest is secondary and derivative. He feels interest in that which seems valuable to him. His sense of value in these things is the source of his interest in them, not his interest the source of their seeming valuable. I may be aware of something in which I recognize no value, conceivably, but I cannot be “for” or “against” that thing or take interest in it unless some value is felt to be present. No simple thing in complete isolation from all other things could have any value. Values arise in relationships. The broader, the more fundamental, and the more completely integrated the relationships between the individual and his world may be, the larger will be his experience of values. It seems to follow that there is but one ultimate source of values, according to the reasoning of those who accept this third position: that ultimate source of all values must be found in the real unity of all things; in the systematic order which unites in one functioning whole, the entire universe.

III. INSTRUMENTAL AND INTRINSIC VALUES

We are well aware that many things are good because they are good for something. We regard them as valuable because they serve us as instruments in reaching ends which we desire. In themselves, they may have other values than these, or they may seem to possess no value at all. Thus for an art dealer who is interested only in making a financial profit a masterpiece is valuable as an instrument by which the profit may be made. A philanthropic politician who purchases the picture may use it as an instrument in gaining reputation as a patron of the fine arts when he presents it to a municipal gallery in his home city. The artist who studies it there may make a copy which he can sell for much needed remuneration, or he may take delight in the picture itself, forgetful of all values save its absorbing perfection as a work of art. Houses and university buildings, machinery and transportation sys-

tems, newspapers, journals, books, farms and offices, clothing and food—these and innumerable other things which daily we see and use are valuable to us chiefly if not altogether as instruments. They help us to do and be what we wish. No one can doubt the presence of purely instrumental values in things, or the vast number of things which appear to us to possess only instrumental value.

A more debatable conclusion is reached, however, when we affirm that there are, in addition to these, intrinsic or ultimate values. Such a statement means that there are values which do not depend on anything beyond themselves for their worth. They are not good because of what they do in furthering other ends, but they are good in themselves because of what they *are*. Now, in fact, is anything good except as it serves some end beyond itself? And is any end good except as it contributes to some larger good than itself, or as it assists in the securing of further ends?

If, with the pragmatist, we view life as being made up of activities directed towards the satisfaction of particular needs, whether physical, intellectual, moral, æsthetic, or any others, we may further agree that the values which we prize and find likewise have their origin in these needs and their satisfaction. Having certain needs, as physical organisms, *naturally* we desire their satisfaction and feel value in that which provides such satisfaction. We feel the value because of the satisfaction; we seek that which has the power of giving this satisfaction, not because of what it may be, or because it may have any value in and for itself, but because it serves and therefore has value for us. Nothing is valuable absolutely, or always, or in and for itself, but only when and so far as it serves human needs.

If, on the other hand, we ask why certain things give us more satisfaction than others, or why we prefer some things to others, we may be led to quite a different conclusion. We may believe that things do not get their value, at least in some cases, from the fact that they serve us, but we may feel that they are able to serve us because the value actually is

in them. For example, is beauty good because on experiencing it in some form we find delight, or do we find delight in certain experiences because in them we come in contact with and enjoy beauty, which itself is valuable? Does one find value in a sunset over the Grand Canyon because of the satisfaction which it gives to him, or does one feel satisfaction on beholding the beauty which actually is in and a characteristic of the sunset itself? Is an act of courage good because those who learn of it feel satisfaction in its having been performed, or do they feel this satisfaction because they recognize goodness in it?

The problem of the status of values, the question of whether all values are purely instrumental or whether some values are absolutely and independently real, does not arise in connection with a large part of the values of life. These, all would admit, are purely instrumental. Money, for example, is good because of its purchasing power, as machinery is good because of what can be manufactured by its use. In times of great inflation, a suitcase filled with money may be worth next to nothing, and if better machinery is invented, the old sinks to the value of scrap iron. But if *all* values are instrumental, if everything is good solely because it serves something else, would not everything in fact be quite valueless? That is, if A is valuable because it makes possible the attaining of B, and B is valuable because through it C can be secured, will not the value of A depend on the value of C? And if this be carried on, nothing having any value in itself, but everything only because it serves something else, will not the whole series and all that is instrumental lose its worth? Must there not be some values which are real in themselves, and which are sufficiently great to make that which serves their realization good for the reason that it does make that realization possible? Such would be the questions raised by the critics of the instrumental theory. Further, they would add, does not the experience of these values itself indicate their intrinsic and real significance? One may gain satisfaction in listening to symphonic music, but what lover

of music is aware of finding value in the concert because it gives him delight? Rather, his experience, at least as it seems to him, is that of apprehending a value in the *music*, which is in and for itself, sufficient to give pleasure as its *product* to him as he experiences it.

The question has a significance beyond that of the theory of the nature of values; it is at root a question as to the nature of our world. Are values a genuine part of that world, or are they products of human psychological or motor-affective activity? Is the world itself a realm of mere existents, a meaningless and valueless order of physical activity and reaction, devoid of all those qualities which seem to give it warmth and human interest; is it a world of such a kind that if we could view it as it really is, nothing would seem better, or more beautiful than anything else? Are such characteristics creations of our own, which we then associate with particular objects and events according to the ways they affect us? Or are the effects of our contacts with the world regarded by us as good or evil, beautiful or ugly because they actually are so, and consequently disclose these values, positive and negative, when we come in contact with them? This question of whether we *find* value in the world, or whether we ourselves *create* all the value that exists—all else being a mere whirl of atoms, has been called by Professor Urban the “Great Divide” in modern thought. Certainly it is the primary question of metaphysics, which underlies most other questions, and it is the chief dividing line between the two major metaphysical positions in modern philosophy, *naturalism* and *idealism*.¹

¹ Cf. Chapter XVIII. For literature on the subject-matter of this chapter, cf. bibliography at the end of the book.

CHAPTER XVII

TYPES OF VALUES: MORAL AND AESTHETIC

I. THE CLASSIFICATION OF VALUES

The term "value" is of fairly recent appearance in the discussions of philosophy, but it is the term, rather than that for which it stands, which is new. Morality, art, religion, these and other subjects which deal chiefly with that side of human experience concerned with the significance or worth of things, have long occupied a central portion of the philosopher's interest. But it was customary to regard them as somewhat though not altogether, isolated fields of study. The introduction of the new term was of far greater importance than could be any mere changing of names. With it came a new conception. All goods, or that which makes anything good in any way, must be closely related to that which makes anything else good in its way. If a courageous act and an inspiring religious experience, and a beautiful sunset or symphony, and a game of tennis, and legitimate profit in one's business, and an honest and efficient government are all good in their various ways, it must be because they all possess some characteristic in common. At least they are all desirable, under favorable conditions. Why not recognize this common characteristic and give it a single name? This will show the relationships which exist between our activities, and will suggest the possibility of so organizing them in each individual's own situation as to make possible the securing of the greatest total of that characteristic, *value*, which makes us desire any of them. Thus the concept of value allows us to relate apparently very diverse interests and activities in terms of a common element—their worth or value to us. And by isolating this general characteristic, which things have in various forms and degrees, of

having value, we should be enabled to investigate not only what things about us are factually, but also what is the real nature of their significance.

It would be impossible, obviously, for us here to inquire into the nature of all the forms of value which may be found in human experience, but at least we may note a few of these forms. Since none are more fundamental in human society than those of morality, art, and religion, we shall select these for closer examination.

II. THE MEANING OF MORALITY

What is morality? What does it mean to be moral? Is there any moral standard, any specific way of thinking and acting, which always and under all circumstances is the moral or good standard or way? In no age, probably, have questions such as these been asked with more genuine interest or with more of a spirit of honest inquiry. In most periods some definite attitude toward standards and ways of conduct has been recognized by at least a great majority of the people as the acceptable and probably the only acceptable one. Often this attitude was inherited from a preceding generation, and not infrequently it was accepted with no more serious questioning into the rightness of the matter than was given to the acceptance of other inherited property. The code was accepted as that of all gentlemen, or that of all respectable folk. In our own day this has changed. We are not sure that the established ways of thinking and acting are the best ways; we cannot so much as feel certain that what our society approves is necessarily and altogether good. Due in part, it may be, to more widespread intelligence, we have grown critical and, being critical, we insist upon at least a fair measure of independence in our judgments. We would evaluate for ourselves. We would question high themes and sacred subjects. This questioning, it is true, is frequently misunderstood by those who do not feel with the age. To them it may appear dangerous—even near to blasphemy. Sometimes it may be, but often, and

the more courageous believe most often, this questioning is not intellectual vandalism, but quite the reverse. It is a very serious effort to strip the world of its hypocrisy, to live honestly and sincerely, even if this means living intellectually less comfortably than some other ages have done. We are quite certain that some ways of living and acting are better than others, as some ideas are truer than others, but how is one to discover which are these better ways? And even more fundamental, what is it that makes one way *better* than another? What is meant by *better*? What characteristic is it about some things which makes them *good*?

III. THE IDEA OF A HIGHEST GOOD

A brief survey of the history of ethics shows that, for the greater part, those who have been concerned with its problems have believed that there is some one highest good (*summum bonum*) which is to be sought above all else. If anything besides this highest good is considered worth seeking, it must be because it can in some manner be made to serve the one supreme good of all living. All other goods are secondary, and derive their goodness from the way in which they assist in making *it* possible.

If there is some one highest good, it would seem that we should be able to determine what it is. What, if possessed, will make life most worth living? But here there is wide disagreement. If we examine these divergent views more carefully, however, it is to find that they usually fall into one of two general groups.

i. Hedonism.

One of these groups includes all theories based on the belief that pleasure or happiness is the highest good. This position is known as *hedonism*. The term is a broad one, however, including those which would make sensuous pleasures the chief aim of life, and those which would subordinate these to pleasures of the mind, or to contentment, which is quite different from pleasure in the sense of particular pleas-

urable feelings. It includes those who exalt the pleasure of the present moment, and those who place their attention upon securing the greatest pleasure in life as a whole. And it includes those who place individual pleasures first, and those who would subordinate these to the happiness of the greatest number of their fellows.

Democritus was probably the first philosopher to develop a hedonistic ethical theory, but we know next to nothing of his theory. With the Cyrenaics, a group who claimed to be followers of Socrates' teaching, though in fact no position could be more opposed to his central teachings, we find a very crude but a consciously developed ethical hedonism. Their view may be summarized quite simply: Pleasure is the only good in life. Bodily pleasures are more intense than mental, and therefore to be preferred to them. We possess only the present—the future may never come—hence the wise man will fill the present moment with as intense pleasures as possible.

With Epicurus (341-270 B.C.) and his followers, we come to a very different and more sophisticated expression of hedonism. Pleasure, indeed, is the greatest good, they held, but the most enduring and greatest form of pleasure is not sensuous enjoyment, but unbroken contentment. He who gives himself to riotous living must endure its consequences. While we may not call his pleasure itself evil, yet the form in which he takes pleasure brings with it more than a counterbalance of pain. The wise man will seek to avoid intense experiences, either of pain or pleasure. He will live simply. He will take delight in thought, in art, in those things which may be enjoyed with only pleasure as a consequence. He will view life as a whole, for he must accept all that it brings, and only a short-sighted man will therefore forget the future for the sake of reveling in the present.¹ As we have seen in our earlier discussion of materialism, Epicurus saw in the external world only a blind mechanical order, a movement of

¹ For an account of Epicureanism and the other forms of hedonism mentioned here, cf. the writer's *Ethics*, Chapters IV and VIII.

atoms which are insensible in themselves to any other force than physical contacts exert. Yet even in such a surrounding, man may rescue for himself a certain degree of joy. He may do so, however, not by relying on external things, which he cannot control, nor upon the gods, who are far removed and oblivious to his needs. He must seek whatever joy there is to be found within himself. He must be free from cares over external things, and withdraw from all that might render life painful. He must seek the delights of mind, and above all the contentment of a placid spirit, which is undisturbed by even the issues of human welfare and civilization.

Such a position is far removed from that which urges the pursuit of each pleasure that stirs a vagrant fancy. Indeed, from a philosophy of pleasure in any strict sense, it adopts a quite different highest good—contentment and happiness. Much confusion has resulted in hedonistic thought from the frequent confusion of these two. Pleasure is a term best reserved for particular feelings, and happiness is a persistent state of mind, not a mere sum total of such feelings. If one is aware of oneself as a single or integrated being, the fleeting visitations of momentary pleasure-feelings scarcely can seem an adequate or satisfactory end for that life *as a whole*. Further, the question must be raised as to whether hedonism does not reverse the true order of the relation between goodness and pleasure, when it insists that anything is good because it gives pleasure. May not the truth of the matter, at least in the case of the "higher" pleasures such as those derived from thought, achievement, or the experience of beauty, rather be that the *goodness* of these things being recognized, pleasure follows as a natural *consequence*? Would they not be good, whether they did or did not give pleasure or add to happiness?

Further, can we stop with *individual* pleasures or happiness? Epicurus extended the doctrine that pleasure is the greatest good, from one which applied essentially to the present moment, to one which had to do with life as a whole. But can we stop even there? If pleasure is the greatest good,

is it not rational to feel that one should seek to increase the pleasure of mankind to the greatest amount possible? Such was the view of John Stuart Mill and of many *Utilitarians*—or those who place *the greatest happiness of the greatest number* as the chief aim of the moral life. Mill even went so far as to hold that one should be willing to give up his own pleasure, and sacrifice himself if necessary to serve this greatest social good. Can one logically stop short of this conclusion? Yet to accept it is virtually to give up pleasure as the supreme end of living, and place social duty in supremacy. For if I actually sacrifice myself for what I regard as the good of others, I cannot do so for pleasure. If I do something *for my pleasure*, even though it may involve great cost to me, certainly the act cannot rightly be called a *sacrifice* for someone else. A real sacrifice then would be for the good of *others*, and whether that good happened to be viewed as their pleasure or something else would not change the nature of my act. It still would have duty or some other motive than pleasure behind it.

Pleasure and happiness are values; they may well be desired. In itself, there certainly is no gain in an unhappy life. And it is to be regretted that the opponents of the pleasure theories have refused to give to pleasure its rightful place. It is a value, and to be sought. But it is not the only value, and there are serious difficulties to be faced by anyone who would claim for it a supremacy over all other kinds of value. The difficulty seems to lie in the fundamental idea that there is a single highest good. Would it not be better to say that the only supreme good is the most valuable life possible for all men, and that the most valuable life is not one in which any particular value is placed above all others, but rather it is one in which a wide range of values are secured and organized into the *most valuable combination possible?*

2. Perfectionism.

Opposed to the group of hedonistic theories, we find those of perfectionism (or *energism*). These maintain that the

highest good is not to be found in pleasure, but in development and the perfecting of the individual and society. In the earliest form with the Cynics in Greece, the way of perfection lay in discarding man-made conventions and living according to the ways of nature. For the Cynic, this frequently meant refusal to accept the conventions of polite society, and sometimes even those of ordinary decency. The general conception received a far more intelligent and, in certain aspects, a lofty expression in the philosophy of the Stoics. Nature, for the Stoic, meant not merely the unconventional, but rather the vast, impersonal rational order of the universe. This nature in which we move and live is a perfectly orderly one. Its ways are those of absolute reason; its order is a sublimely majestic one. No human act which is capricious, dishonest, passionate, can be in accord with that order of our coldly rational universe. And being out of harmony with the world in which it is performed, it is evil.

How is one to live rationally in a world as paradoxical and irrational as that of human society? The answer of the Stoic was similar to that of the Epicurean, though for a very different reason. There is but one way. We must not concern ourselves with the prizes, the perplexities, or the interests of this ordinary world of men. If we do not withdraw from it altogether, we must move about as men in armor. Our spirits must be in command. No happening, no experience can do anything to *us* except as we allow it to. Many incidents may befall us which we cannot control, but we are able always to control the ways in which we allow them to affect our spirits. The wise man will remember that he is greater than anything which can happen to him. He will guide his ways through the turmoil and conflict of ordinary life by the calm and unerring light of reason.

Gaining his incentive from this Stoic teaching and from that of Christianity, Immanuel Kant developed the most important expression of perfectionism yet given in the modern world. As we have seen, he maintained that by *pure reason*, only mathematical truth can be known with cer-

tainty. But man possesses and directs his life by another light, that of *practical reason*. Practical reason seeks justification for its conclusions and actions, not from logical demonstration, but from the values which they possess. One cannot prove the existence of God logically, but one may find that the value of belief in God is so great as to make it well-nigh imperative. Similarly, there is a moral law within man's own being which places an imperative upon him. Knowing himself to be a being of intrinsic worth, he must accord to beings like himself a similar worth. If he would recognize his own rights, he must also recognize that others like himself possess similar rights, and that these rights in others place upon him obligations. The nature which we find in ourselves, and must believe that others like us possess, is such as to possess intrinsic worth. They therefore are not to be used to serve our ends but must be respected for themselves. Other men, because they are human beings, must be treated as *ends* and not as *means* to anyone else's ends. Rational action and right action are identical. The moral quality of any action must be judged not by its results, which may be different from those which the doer anticipated, but by the motive which prompted the action. We are responsible for our motives, which are wholly within our own control, not for the results, which are at times beyond our control. What, then, makes a motive good? Kant answers that only one thing can do this. It must express a desire to do one's duty. And to do one's duty is always to seek to obey the moral law, the law of treating others as reason dictates that they should be treated. Since to act morally is to act rationally, and since as human beings we are essentially rational beings, it follows for Kant that to act morally is both to express the moral law and to realize our own natures. Hence, on the one hand, his doctrine may be called legalistic, while on the other it may be said to be a doctrine of self-realization.

Now no one can doubt the importance of rational action, and no one can deny the importance of self-realization.

But is this all that needs to be said? We are rational beings, but we are also emotional beings. To act in accord with one's duty is good, but is it not good at times to act from other motives too, for example, for pleasure, or from love to the one we seek to benefit? Again, though from the opposite side, we see the difficulties involved when a single good is called *highest*, and a single motive *best*. Some goods, doubtless, are greater than others, and more to be sought, but the greatest good should incorporate rather than discriminate against these lesser ones.

3. The Unity of Moral Values.

If we approach the problem of morality from the point of view of values, rather than of a search for a highest good, our problem becomes that of discovering what combination of values—values of all kinds—will itself be worth most. This point of view is opposed to the common tendency of departmentalizing life. In many periods, morality has been thought of as a separate department or division of life, having to do with certain types of conduct, but quite unrelated to other types. Similarly, religious values were located in a definite position, having to do chiefly with the realm of "sacred" things. And a similar isolation was placed upon æsthetic values, which were thought of mainly in relation to music, pictures, literature, and landscapes. To speak only of morality, such division now seems unwarranted. That which adds to the total worth of human living is good, and any and every thing is good in so far as it does increase this worth. Some things and some kinds of action may make a larger contribution than others—they are then better, and if a choice must be made, they are to be preferred. To prefer the lesser to the greater value is an evil. But this does not render the lesser of no significance, or deprive it of moral value when it may be secured without foregoing a greater good. The moral value of anything, then, consists in its capacity to add to the total worth of human living, and the evil of anything lies in its capacity to detract from this total.

worth. There is moral significance in education, in the enjoyment of art, in healthful exercise, in recreation, and in all things which, when properly balanced with other things, make a more valuable thing of man's life. Morality is not primarily a matter of prohibitions, of "thou shalt nots," but of positive enrichment of life to its fullest capacities. Ways of doing this may vary somewhat with individuals, and particular standards which seek to express ways of securing moral values for a particular people at a particular time and in a given situation, may vary from other standards of other people at other times. Such standards are but attempts to offer directions as to how to find the values of life. But behind all of these changing standards are the values themselves, and the unchanging ultimate aim of all "good" men, everywhere and at all periods—the aim of making no trivial thing of living, but the most valuable thing possible. Mankind has many points of view—each in a measure fragmentary. Many ways have been attempted from these points of view, to reach a life worth living. But to all, some things seem better than others, and through these, whatever they chance to be, each seeks to reach and realize for himself more than the bare facts of existence.

We may grant, indeed, that all particular moral standards are relative. They express the attitude of a particular people, with their peculiar racial, national, and local traditions. They represent, too, the specific ends which seem good to that people, at least in part because of their particular needs. Yet, having agreed thus far to the proposition that moral standards are relative, there remains the *good* itself, in whatever form, toward which these varying standards are supposed by their adherents to lead. What shall be said of the nature of this *good* which the standards attempt to provide ways of realizing, in human life? Is it also relative? Common to all men is the idea that action, thought, and life as a whole, whether individual or social, may possess not only a variety of characteristics and activities which might be described as purely factual, but also that they

) may possess significance. That is, it may be *better* for them to be than not to be, or the reverse. If we define the moral life as the good life, or the moral act as the good act, this is but to say that it has a significance which renders it not merely something to be taken as a fact in nature, but something to be desired or preferred, due to a positive contribution which it will make to the worth of living. Whether anything is good only because it thus enriches human life, or whether in itself it is good and *therefore* its presence does add worth to living, is a further question.

The point which concerns us at present is that all men are alike in seeking this significance, this fullness of profit, this value, from their actions and their lives as a whole. The customs and traditions, the institutions and even the civilization of particular peoples may rise and fall. That which they sanction and exalt may come by others to be looked upon as base and heinous. This is not to say that men seek different and contradictory goods, but rather that they seek the common good—the most valuable life—in ways or by means which others may regard as ignorant or actually evil. The thief and the honest man, the harlot and the saint, alike seek what they regard as the most valuable life available to them. Their thievery or vice, their honesty or saintliness, are the varying roads which they travel seeking the same ultimate and universal end of all human living. This does not mean that all roads are equally good, or that there can be no mistakes made in which is chosen, or, indeed, that all roads will even so much as carry one in the direction of the end desired. But it does mean that our differences are with regard to our ways of reaching the end and our ways of interpreting it in terms of practical action. The good which these seek, however erringly, is a common good, founded in human nature itself, and for all men an absolute and imperative end. Many ideas and conventions, many attitudes and practices may be found obnoxious, ignorant, cruel. But none exists in society except for a value which someone seeks in it. This is not to say that it is advisable or good,

even for that group or person, for in order to realize the value which they seek from such ideas or practices, they may be depriving themselves and the world of greater values. But he who would study history and social institutions with genuine understanding may well heed Professor Parker's words: "To look for a value behind every convention and creed is the beginning of the wisdom of life."

From the point of view of the theory of value, the fundamental error in many of the established systems of ethics is to be found in their failure to recognize that morality must be looked upon as *gradational*. That is, specific actions cannot be neatly sorted into two groups, one to be labeled "good" and the other "evil." These are terms which have to do with directions. That which actually furthers the realization of greater values in living is *good*; that which hinders and subtracts from the total worth of living is *evil*. Few specific actions under all circumstances and for all people are either always good or always evil. This has been stated nowhere more happily than by Saint Augustine: "When the will abandons the higher and turns to what is lower, *it becomes evil, not because that is evil to which it turns, but because the turning itself is perverse.*"

Evil, as Professor Tsanoff suggests, is a "drag" away from the valuable life. This does not mean that anything, to be evil, must have no value, for that which has no value holds no appeal. If evil had no value, the world would soon be free from it altogether. It does mean that its values in some way prevent the realization of other and greater values for those who seek them. So Josiah Royce described evil: "By the evil which we experience we mean precisely whatever we regard as something to be gotten rid of, shrunken from, put out of sight . . . or otherwise directly or indirectly resisted. By good we mean whatever we regard as something to be welcomed, pursued, won . . . preserved. And we show all this in our acts in the presence of any grade of good or evil, sensuous, aesthetic, ideal, moral." Thus pleasure has value, but pleasure becomes evil—that is, its value becomes

negative—when its pursuit, for example in licentious living, crowds out or destroys the capacity for that which would make life more worth living than wantonness can do. “A man’s character is revealed in what satisfies or pleases him, but the worth of one’s character or of an act cannot be judged by the mere fact that pleasure is experienced. Ethics as well as æsthetics not only measure enjoyment; they also judge taste. Indeed dissatisfaction with a certain sort of life may be the first mark of moral uplift in a man. It was not ill but rather on the way to being well with the prodigal son when his swinish life became disgusting and painful to him. His blessedness began when he realized that his pleasures were wretched. So the real question in ethics cannot be simply: Are men happy or unhappy? It is rather this other question: Is it well that men are thus and thus happy or unhappy? While pleasure and displeasure, satisfaction or dissatisfaction of some sort enter into every moral situation, these require moral evaluation and grading. The moral value of conduct cannot be judged merely in terms of the amount of pleasure it yields.”¹ Rather, conduct must be judged by its total value for human living, pleasure or any other value being considered in relation to this worth of life as a whole.

Such a view of morality may seem to some too broad and vague to be satisfying. It does not issue specific commands as to what to do or what not to do, and it leaves the decision of what is valuable action to a considerable extent to individual discretion. In reply, it may only be said that philosophical ethics does not attempt, and should not attempt to be a substitute for individual intelligence. It cannot save us the trouble of being intelligent and thoughtful about the business of living, by presenting a precise set of rules. Rules may be useful, but they are useful as expressions of the experience of others. They inform us as to the consensus of

¹ R. A. Tsanoff, “The Theory of Moral Value,” in *Contemporary Idealism in America*, p. 222 (edited by C. L. Barrett). Published by The Macmillan Company, New York, 1932. The reader will find it most profitable to refer to Professor Tsanoff’s *The Nature of Evil*, published by The Macmillan Company, New York, 1931.

social opinion, based as it may be on a broad area of human experience. For the immature and those incapable of reasoning about such matters, they may be highly important guides. But the thoughtful man and woman will not care to delegate the forming of their conclusions on matters of such importance to others. They may seek and profit by the opinions of those who have lived before and those who live around them. The experience of centuries assuredly is not to be lightly cast aside. But the ultimate decision as to means for the attaining of the greatest value from life, both for himself and for society, is one which demands the most serious thought of each of us for himself. Only so does one accept the responsibility of living fully as a human and a moral being.

IV. MORALITY AND THE SOCIAL ORDER

From the point of view just discussed, morality may be said to be an individual matter—that is, it has to do with the responsibility of the individual for acting in a way which increases the significance of human living. But while moral judgments in one sense are always the judgments of individuals, they may be said in two other senses to be social judgments: (1) they are judgments which have to do with social relations; (2) they are determined in large measure, even for the most rational and independent thinker, by social influences.

i. Judgments on Social Relations.

It may be asked in what sense we may say that moral judgments have to do with social relations when we have already maintained that *moral* value means merely the value of anything viewed in relation to the worth of life as a whole. Are there not many things that enrich individual life, and so have moral value, which have no social importance whatsoever? To this question the reply must be that the individual himself, in the total nature of his being and acting, does have social importance. The kind of life he lives, the

way he acts, the contributions which he makes or does not make to the work of the world or to the thought, beauty, or warmth and satisfactoriness of human living, all have their social consequences. If he flee to the South Sea Islands and there live as a hermit, the withdrawing of his powers and contributions from social life has consequences, negative but no less real, for mankind. Hence, that which enriches the life of the individual thereby enriches his social relationships and adds its value to the total value of human living.

But is not moral living also social living in a more direct sense? Do not moral actions affect other people in a definite and specific way which other types of action need not do? If by this is meant that we should call only those actions *moral* which have to do with a very limited set of relationships, or if by it attempt is made to restrict the term morality to certain particular prohibitions, such as those against stealing, lying, and adultery, the definition is too narrow and too negative to be defensible. On the other hand, if it be meant that moral values are attached chiefly at least to actions or motives where the welfare of other people is directly concerned, this may be admitted. It is true for the reason that the most valuable way of conduct is that which is not only valuable to oneself, but from which the greatest value accrues if consideration is given to the interests of all those who are in any way affected by it. If A and B are similar human beings, each possessing the capacity to realize values, there is no reasonable justification for A's drawing a line of separation between himself and B, or feeling that his own values are more significant or valuable than are those of B. The most valuable act, and so the moral act of A, must be that calculated to produce the *greatest total value in the situation*, that is for himself and B, looked upon as common partners, having joint interests involved. A will not feel that his values, because they are his own, are either more or less significant than those of B. He will neither take an attitude of groveling insignificance, nor one of

blatant self-superiority, but will face B as human being to human being, seeking the greatest total good which can be derived from their relationships. To live so is to live intelligently, it is to live socially, and it is to live morally. Between these there is no reasonable basis of opposition.

2. Social Influence and Moral Judgments.

The social character of moral conduct may be emphasized in a somewhat different way by pointing out the influence of social attitudes on personal judgments. This may vary in degree all the way from mere subservience to traditional attitudes and institutional practices to the most independent radicalism. There is no conceivable way by which any human being can forget all the assumptions commonly accepted by the society which constituted the background of thought and life—the environment—in which he was reared.

There is no way by which he can free himself altogether, or to any great extent fundamentally, from the socially stimulated habits of response and thought the development of which has marked the stages of his progress to maturity. And if all of this could be unlearned, all traces of human influence effaced from his life, there would be no source to which he might turn for other, not to say better, assumptions and forms of adaptation, by which to enable him to go upon his independent way. Thus, for all ideas of values and all means of actually securing values, the individual is dependent upon society, even as he is dependent for the basic principles of his thought, as well as the language which he employs in communication and to a large degree at least in thinking. Such values as those of justice and benevolence obviously could have no realization apart from social relationships. Nor would the man in isolation know the meaning of honesty, of courage, or of truthfulness, if he had not previously received social schooling in these virtues. Furthermore, his own significance as a moral human being would be clouded if not obliterated from his under-

standing. For it is the basic appreciation of rights and obligations which constitutes this significance of men for themselves as well as for each other. To recognize oneself as a being possessing *rights* is to think of one's being as more than an existent fact in nature—stars and clods possess no rights. That which differentiates man is the power which he possesses of acting not only as a physical being in a world of physical events, but also as a thinking, feeling being who evaluates the objects of his experience. The capacity to appreciate values, to recognize that some things are better, more beautiful, more true, or otherwise more significant than others, is his unique possession. Without this capacity, he would have no basis for recognition of any worth in life, any significance in living, or hence, any value in his own nature and existence. As a valuer, he finds his own nature valuable, and it is the recognition of this value in himself which constitutes the foundation of his assertion of rights. Likewise, it is because others like himself are not merely physical beings, but are capable of appreciating values, that he must recognize also value in their natures, and hence their possession of rights, similar to his own. Their rights become for him obligations, and his rights impose corresponding obligations upon them. Rights and duties are reciprocal. I can have no rights which it is not the obligation of others to respect, nor can they have rights which do not place corresponding obligations upon me. There is no reasonable justification for the position of an individual or a government which insist upon their rights and hence upon the duties of others or subjects to respect those rights, unless there is corresponding recognition on their part of their own obligations to these others or subjects. For only those who possess values can possess rights, or appreciate rights. We can have no obligations except as we are related to others who have rights, which we are obligated by their nature to respect. And it would be meaningless to assert that one had rights which no one had any obligation to respect. Thus our nature, as significant human beings, de-

pends upon our capacity to appreciate values. This significance endows us with rights and obligations. But rights and obligations can exist only where there are social relationships. Essentially, morality consists in the clear and consistent recognition of the significance of human beings for and by one another.

V. AESTHETIC VALUES

Aesthetic values usually are associated in our thought with art in some form. It is there that they are most clearly and distinctly perceived, but the rôle of æsthetic values in human life is a far broader one than any particular field of interest, even that of art, can contain. Plato not only placed beauty as an eternal value along with the true and the good, but pointed out that the three ultimately are inseparable. In truth, we discover a harmony of thought which is not only satisfying to pure reason, but pleasing to æsthetic judgment as well. The mathematician feels an æsthetic pleasure in the perfection of a solution which he has discovered to a difficult problem that is intimately related to, if not actually identical with, the creative joy of the artist who has completed a statue or a musical composition. The scientist finds more than purely intellectual adequacy in a satisfactory theory which he has formulated. There is a feeling of exultation in the consistent harmony of this arrangement of what formerly appeared to be scattered fragmentary facts. The same æsthetic pleasure is felt by the lawyer in a well-developed brief, the surgeon in a deftly performed operation, the student in a well-written examination paper. Likewise, the good act is never without its æsthetic aspect. There is a certain perfection in the act as a full expression of that which is valuable in the doer, and a sense of harmony in the way in which it enters the "picture" which we hold of the life of society. To lie, to cheat, to kill—these are discordant with the harmony of things. They detract from the satisfaction of a well-ordered life.

There is another sense in which the profound significance of the æsthetic element in life is evident. Reason is preferred to the irrational not only because its practical fruits are more advantageous, but also because the consistency of an ordered harmonious thought is more pleasing to our feelings than its opposite. We are dissatisfied with the fragmentary, the contradictory, and we cannot rest until that which seems chaotic in our experience is reduced to order. Furthermore, reasoning itself is but an arrangement of direct insights—or what, as we have seen, Descartes called intuitions. We *feel* that its steps must be as they are. The relationships between propositions through which we are carried in our reasoning are not themselves reasoned about, but recognized directly as right and inevitable. Reasoning may reduce the extent of these relations to a point where we can immediately see and feel their necessary connection, but reason can proceed only if we take steps of some length—that is, immediately feel the connections. Thus all thinking proceeds by using æsthetic intuition at every step of its way.¹

If we seek to compare æsthetic with moral values, it is to find both differences and likenesses. Among the differences, perhaps the first to be noticed is that whereas moral values are essentially *personal*, æsthetic values are essentially impersonal. As we have seen, moral values are realized in relationships to other human beings. They arise in the recognition of ourselves as *persons* possessing rights and duties in our relations to other persons. But in the enjoyment of æsthetic values, our sense of our own individual being seems to be minimized or even lost sight of altogether. A man genuinely appreciative of music, as his experience at a concert becomes more intensely satisfying, simultaneously loses a sense of where he is seated, what he has done during the day, and even of his own independent being. He becomes “lost” in the enjoyment of the music to which he listens and the reveries which it stirs. A sudden calling of his name would find him dazed, and he leaves the concert

¹ Cf. Schopenhauer, *The World as Will and as Idea*, Book I, Section 15.

hall, mentally groping for his equilibrium in that world of facts and faces to which he is returning.

A second significant difference is found in the imperative character which moral values do and æsthetic values do not appear to bear. There is a demand to tell the truth, to act bravely, to spare one's enemy—a demand of conscience, trained it may be by society, but trained so thoroughly, if so, as to be inescapable. Violate it, and there is a sense of dissatisfaction and even remorse. Moreover, since moral values are so intimately related to social welfare, society reinforces this moral demand in the case of harmful acts with the commands of law. For those who break these laws, reform institutions and penitentiaries are provided. But we feel no deep disgrace in failing to appreciate Brahms, and society, far from punishing our failure, provides means for our education in such matters, in the form of lectures, concerts, and museums.

On the other hand, despite these differences, the relation between moral and æsthetic values is so close that the two cannot finally be separated. It is unnecessary here to enter into the age-old discussion as to whether art should be used to teach moral truths, or whether the evil may rightly become a subject for artistic portrayal. There are stages of immaturity in the mental development of certain people, some adults as well as children, which may render their association with certain works of art injudicious. Art is the portrayal of life, and there are aspects of life which are not suitable subjects for some minds to contemplate. But in so far as art is art, it must depict something real, something fundamental in the world of nature or of man. If it presents a distortion of reality it is not good art, and if it presents a deep insight into that which is real, it cannot in itself be evil. To present a searching insight into the inner nature and meaning of that which is evil is not itself evil, though such a presentation may not be suited to the maturity and understanding of all who observe. It is by depicting reality honestly and fearlessly that art, like sermons, justifies its being.

There remains a further question which again unites moral and æsthetic values—namely, the question as to their status in the whole order of reality. Are they human products and nothing more, or are the moral aims and characteristics, the æsthetic objects—beauty, sublimity—which men prize, but products of their own emotions, or are they genuine in the external and real order of things? “A little analysis,” says Professor Drake, “will make clear in what sense beauty is subjective. . . . It is subjective in the sense that it is not a quality or aspect of the physical things which we call beautiful, or the truth about *them*. It is an effect produced when observers contemplate them. . . . Beauty does not exist out there, waiting to be appreciated; it is *created* by a favorable conjunction of object and beholder.”¹

Is this really true? We may explain the playing of a violin in terms of the movement of a string, and we may describe our responding emotions in terms of sensory mechanism, nerves, and glandular reactions. But this does not answer the question. It tells us merely that there are certain physical activities involved in our gaining the experience of beauty. We do not experience these activities themselves consciously, but their accompanying *music*. And if the music which we hear be our own construction, still there remains the question of how we, as human physical organisms, produced by a non-valuable physical world, which had no meaning or value in it, come to possess this characteristic of appreciating and *creating* such values. Is not value as real a part of experience as any fact? And is it justifiable to neglect so important a part of the facts of human experience, or to assign to them a purely subjective place in the universe? And how does it happen that a universe, which had no value in it, produces evaluators like ourselves? With consideration of these questions we shall be concerned in the following chapter.

The nature of æsthetic judgments, the classification and relations of the various arts, the orders intrinsic to elements of color, sound, and spatial form, temporal structure and

¹ Durant Drake, *Invitation to Philosophy*, pp. 447-448.

rhythm, the nature and use of symbolism—these and similar subjects belonging to the specialized field of the philosophy of art lie beyond the limits of our present discussion, and no adequate treatment here is possible. But they may be suggested as among the most inviting presented to the philosopher who seeks a specialized field of study.¹

¹ For literature, cf. bibliography at the end of the book.

CHAPTER XVIII

RELIGIOUS VALUES: NATURALISM AND IDEALISM

I. REASON AND RELIGION

“Surely,” wrote Matthew Arnold, “if there be anything with which metaphysics have nothing to do, and where a plain man, without skill to walk in the arduous paths of abstruse reasoning, may yet find himself at home, it is religion. For the object of religion is *conduct*; and conduct is really, however men may overlay it with philosophical disquisitions, the simplest thing in the world. That is to say, it is the simplest thing in the world as far as *understanding* is concerned; as regards *doing*, it is the hardest thing in the world.”¹ There are many who share Arnold’s opinion, and to what he says add a certain distrust of those who would inquire further into the nature of religion through such avenues as philosophy and psychology.

No one would deny that many of those in whose lives an earnest religious faith glows most brightly, many of those to whom the consolations and the glories of religion are most real, are themselves simple folk, quite incapable of pursuing the complexities of abstract argument. They find through the sincerity of their faith that for which the scholar searches arduously, and frequently in vain. Nevertheless, though religion may offer abundant values to the simple believer, its values are not all within his reach, and its significance is not to be comprehended fully until sought through rigorous thought as well as belief. Religion offers and is founded upon a view of society and of the world; it incorporates an ideal of living which is in harmony with this social and world-view. The significance and validity of the ideal which it presents for human life therefore depend ultimately upon the sound-

¹ Matthew Arnold, *Literature and Dogma*, Chapter I.

ness of this philosophical position regarding the real nature of man and the universe in which he lives. Faith may assume that this philosophical position is valid, and it may secure comfort and a sense of security and purpose from directing thought and conduct *as if* the assumption represented the real nature of things. The inquiring mind cannot be content to leave the problem thus, for it seeks intellectual satisfaction as well as a way of living. Can the fundamental assumptions of religion be justified? Can they stand the test of critical examination? If not, there can be little value in their belief for intellectually honest men. But if they can stand such a test, then mind too will gain possession of a view of human life and of the world which satisfies its needs. Thus will be realized not only those values of religion which emotion can grasp, but also those which are to be apprehended by intellect. Religion at its fullest must have to do with the whole of life, not merely a sanctified portion. At its best, it must win not only "adoration of the heart," but equally what Spinoza described as the "intellectual love of God."

This does not mean that the mind, in order to gain religious satisfaction, must insist upon "proving" the existence of God or the reality of immortality, or any other doctrine of a particular religion by means of pure logic. It does not mean that rationalistic argument can ever provide absolute religious truth for our thought. Absolute truth may be as unattainable for reason here as in the field of the sciences or anywhere else in the range of human experience. But it does mean that the intelligent man will consider fairly and seriously the soundness of the assumptions on which any particular religious view is developed, that he will insist upon their consistency within themselves and in relation to human experience as a whole. It means, too, that he will view a particular religion in relation to its evident consequences in the life and conduct of its adherents. He will compare the various forms of religion for the purpose of discovering their points of similarity and of difference, and in order that he may understand more fully the nature of those human aspira-

tions which reach out toward these particular ideals. In brief, the intelligent man, whether believer in a particular religion or sceptic of all religion, cannot allow so significant a factor in human thought and history to go unexamined. Whatever his personal beliefs may be, he cannot well refuse to ask the fundamental nature of religion, or fail to consider whatever evidence may be available on the subject.

II. WHAT IS RELIGION?

Is there any genuine difference between religious values and moral and æsthetic values? The identification of religion with morality has been attempted repeatedly. For example, Matthew Arnold, in the work earlier referred to, holds that religion is simply ethics "heightened, enkindled, lit up by feeling." Thus "the passage from morality to religion is made when to morality is applied emotion. And the true meaning of religion is thus not simply *morality* but *morality touched by emotion*." Arnold himself was influenced in this view by the French philosophical school, known as that of *positivism*. Auguste Comte, its founder, published his major work, *Philosophie positive*, between 1830 and 1842. In this work, Comte maintained that since man is limited to his own finite experience, it is futile for him to speculate on metaphysical issues which have to do with the ultimate nature of anything. He may stay with greater profit within the realm of that which he knows and experiences, and there, knowing nothing of ultimate nature, attempt to discover the ways in which human life and knowledge may be improved by his efforts. Since no ultimate knowledge is possible for man, he held that there can be no experience of or reason to believe in a supreme God. We know only one Great Being (*Grand Être*), which is Society, or Humanity. This alone is worthy of our worship.¹ Human efforts at explanation proceed according to the *law of three stages*. In the earliest, men tried

¹ In his later years, Comte developed a religion of humanity, with churches, priests, and ritual, devoted to the worship of this new Supreme Being. The religion won a considerable following in France and England.

to account for events by assigning them to supernatural causes—personal spirits which direct the movements of things. This he called the *theological stage* of explanation. Gradually there emerged another, the *metaphysical stage*, in which *forces* in nature were appealed to. These differed from the spirits of the first stage chiefly in being thought of as impersonal. But the third and highest stage, which he advocated, was the *positive*. Here all attempt to discover ultimate causes is abandoned, and in its stead, men devote their attention to discovering the functional relations between things, with the aim of gaining power to manipulate them for the welfare of mankind. Human welfare is the only known good, and that which serves this welfare is the object alike of moral and of religious interest. Men retain to some extent even yet the theological and metaphysical modes of explanation, but with increased enlightenment, Comte held, these must give way to the purely positive, purely functional, purely humanistic mode, in which ethics and religion become indistinguishable. The movement did not die with Comte, but in many of its more significant aspects has been perpetuated in the thought of such later writers as M. Durkheim, M. Levy-Bruhl, and in Germany by the Marburg school. In America, it has been associated with the thought of certain leaders interested in the psychology of religion. Professor Ames, for example, describes religion as "the consciousness of the highest social values."¹

Yet, important as is the social aspect of religion, both from the point of view of its influence on the individual believer and from that of the teachings of ethical religions on his conduct with respect to other people, it is difficult to feel that a religion of humanity actually can provide all of the values which the sincere believer finds in his faith. It is difficult, too, to feel that moral conduct is not only an important expression of a religious attitude but its sum and substance. In religious experience, there is a reaching out,

¹ E. S. Ames, *Psychology of Religious Experience*, Chapter VII. Quoted also by John Baillie in his interesting book, *The Interpretation of Religion*, p. 313.

not to a humanity like ourselves alone, but to a superior strength and wisdom as well. In worship, there is a communal meeting of human thought and aspiration, but there is the sense, too, that this aspiration reaches its highest significance from the fact that it is a reaching out towards an ideal which is beyond any human attainment, individual or collective, yet an ideal which is more than a dream of human minds—so very much more than a dream still unrealized that it alone, indeed, is worthy of being recognized as the one supreme reality in the whole world, eternal and changeless beyond the flux of temporal being. Whether this religious belief is founded in fact, whether there actually exists such an eternal Being, is one question to which the believer and the sceptic may give diverse answers. But it is quite a different question which asks whether all that pertains to religious experience can be reduced to and restated in a purely humanistic religion. Whatever its validity or its proofs, certainly historically religion has meant and certainly it does mean in addition to all ethical and humanistic relations, a relationship to that Power which is real and influential if not totally dominant in the order of the universe. "At a single stroke," as William James has said, "it changes the dead blank *it* of the world into a living *thou*, with whom the whole man may have dealings."

Stated in other terms, religion has to do with the relation of our values to the real order of things. *Religious value* is that which is realized when one apprehends that particular values of life, and the value of life as a whole, express something real and fundamental in the order of the cosmos. Professor Baillie has defined religion as "*a moral trust in reality.*" Those values which we human beings know as truth, as beauty, and as goodness, may be only human; they may express, not the nature of the world, but the nature of our psychological processes. Religion, in its less developed forms, may show confused thought which takes it to be a mere instrument of fear and an easy device for securing tangible ends without the cost of providing natural means to

bring about those ends. When freed from such confusion with magic, religion represents essentially the belief that the values of human life are not merely products of psychical activities, but rather they are human apprehensions of an order of values which is real apart from our thoughts, and fundamental in the nature of the real world itself. Thus, the believer in religion finds the grounds of his aspirations, of the ends which he prizes and to which he devotes his efforts, the grounds of all that beauty and goodness and truth which enoble life and give it worth, not in his own organic activities, but in the reality of the world of which he is a part. Hence to the religious man it seems that "Conscience provides us with our ideals but (when taken barely by itself) it leaves them suspended in the airy unsubstantiality of wish and desire, of unrealized futurity; while faith gives them a mooring in the real order of things."¹

III. THE PRAGMATIC VIEWS OF RELIGION

Pragmatism, as we have seen, is not a metaphysical system, and it offers us no *world-view*. Those pragmatists who feel the need of entering to any extent into the field of metaphysics combine with their pragmatic method certain metaphysical tendencies taken elsewhere. In the case of James, distinctly idealistic tendencies are present; in that of Dewey, rather distinct naturalistic tendencies. Yet pragmatism is not without something to say upon the general subject of religion. Perhaps no treatment of the general problems of religion is more in harmony with the spirit of widespread thought of the present day than the essay which William James entitled *The Will to Believe*. Here quite frankly he recognizes, consistently with his philosophy, that absolute truth may be unattainable in matters of religion, as elsewhere. Let us grant, he says in substance, that there is no way by which the mind can positively assure itself of the existence or nature of God, or of its own freedom and im-

¹ John Baillie, *The Interpretation of Religion*, p. 318. Published by Charles Scribner's Sons, 1928.

mortality. But there is a further question to be dealt with. Are these beliefs valuable? Do they meet a human need? Would you find life as well worth living, as free and as satisfying without as with them? Should your answer be that life would lose certain values, certain fullness and significance, if they were to be given up, then in that answer you have grounds for holding to them. For value is itself a form of proof, or if not of proof, at least of evidence. In the last analysis, we accept any and every belief because of its value, and if we seek to support a belief by logic, then we accept logic itself because we believe it valuable. There is no reason why the grounds of value, which support all truth, so far as our knowledge is concerned, should not be allowed, equally, to support religious truth. The only justification which can be urged, in the last analysis, for accepting any conclusion whatsoever is to be found in its fruits. If you find the fruits of faith more desirable than those of scepticism, in those fruits is the ample justification of that faith. James was himself among those pragmatists who have found these fruits sufficient evidence. Thus he writes that it would seem "that the stable and systematic moral universe for which the ethical philosopher asks is fully possible only in a world where there is a divine thinker with all-enveloping demands. If such a thinker existed, his way of subordinating the demands to one another would be the finally valid casuistic scale; his claims would be the most appealing; his ideal universe would be the most inclusive realizable whole. If he now exist, then actualized in his thought already must be that ethical philosophy which we seek as the pattern which our own must evermore approach. *In the interest of our own ideal of systematically unified moral truth, therefore, we, as would-be philosophers, must postulate a divine thinker.*" All pragmatists, of course, are not bound to reach this conclusion, but the method used by James in coming to his conclusion is the *method* which the pragmatist would apply in dealing with religious as with other problems. Here, as elsewhere, what cannot be known absolutely may yet be

considered and decided upon, at least provisionally in the light of human needs and the most successful manner in which they may be satisfied.

IV. NATURALISM, IDEALISM, AND RELIGION

The two names, naturalism and idealism, refer to the two primary world-views now held in philosophy.¹ They might be differentiated in various ways, but their essential point of divergence is to be found in their positions with respect to values. Most if not all other differences in some way follow from this. There are many and varying forms of naturalism, as there are of idealism, but again it is with reference primarily to their general attitude toward the nature and status of values that these varying forms of either position are united. If religion be freed from all particular doctrines of specific religious groups, and if it be viewed in the terms suggested—if it be regarded as the belief that the values of human life are not purely man-made but represent something genuine and regulative in the real nature of the world, then in this sense it may be said that idealism is the expression of this religious attitude. On the other hand, naturalism would be opposed to such a position. Most naturalists would hold values to be purely human products. Without man, there would be no trace of any value in the entire span of the cosmos. Only in his experiencing of things do they become beautiful or true or good. Apart from him, there are only physical events, processes, activities; unconscious energy, shaping itself into countless meaningless and valueless forms, which pursue no purpose whatsoever. No generalization is adequate, and it is but fair to say that some philosophers, for example Professor Alexander, who may regard themselves as mainly naturalistic in their thought, yet may at certain points offer somewhat different and even opposed concep-

¹ Naturalism: cf. Chapters IV (Materialism) and XVI (Naturalistic Views of Values).

Idealism: cf. Chapters VII (Spiritual Pluralism), VIII (Idealistic View of Substance), XV (Idealistic Theory of Knowledge), and XVI (Idealistic Theory of Value).

tions. We cannot here do justice to all of those individuals who in various ways combine in their own thought tendencies of both naturalistic and idealistic thought. Their presence may suggest the inadequacy of our philosophical differentiations, but for convenience we must deal with such names, remembering that they represent only the main differences of the majority of their followers. Yet even with Professor Alexander, it must be remembered, values emerge from the non-valuable world of physical nature. (Cf. Chapter XI, Section IV.)

The religious attitude of naturalism is presented clearly, though perhaps in too extreme and dramatic a form, in such words as the following. "Nature's purpose, if purpose she can be said to have, is no purpose of his (man's) and is not understandable in his terms. Her desire merely to live and to propagate in innumerable forms, her ruthless indifference to his values, and the blindness of her irresistible will strike terror to his soul, and he comes in the fulness of his experience to realize that the ends which he proposes to himself—happiness and order and reason—are ends which he must achieve, if he achieve them at all, in her despite. Formerly he had believed in even his darkest moments that the universe was rational if he could only grasp its rationality, but gradually he comes to suspect that rationality is an attribute of himself alone and that there is no reason to suppose that his own life has any more meaning than the life of the humblest insect that crawls from one annihilation to another."¹

It may well be granted that naturalism springs from a thoroughly praiseworthy motive—the desire to be honest, to assert or believe about nature only what can be shown true in actual experience. Essentially it is a protest against the separation of reality into an experientiable, knowable world of nature, and an unknowable and inexperiencable realm of the supernatural. It is a demand that man shall depend fully upon his experience and reasoning based on experience.

¹ J. W. Krutch, *The Modern Temper*, p. 8. Cf. Bertrand Russell's *Free Man's Worship*. Also his *What I Believe*.

The protest against such separation has been voiced by Professor Dewey: "Value . . . usually . . . marks a desperate attempt to combine the obvious empirical fact that objects are qualified with good and bad, with philosophic deliverances which, in isolating man from nature, qualitative individualities from the world, render this fact anomalous. The philosopher erects a 'realm of values' in which to place all the precious things which are extruded from natural existence because of isolations artificially introduced."¹ It is insisted that man is altogether a part of nature. From nature he is formed; within it are found the indispensable conditions of his life and activities; about it he thinks and with respect to it he formulates his purposes. When the conditions of his physical life are unsuitable, he dies. Nature, it is urged, must not be explained in terms of man, or as finding in man more than one among many of its multitudinous forms and products. Man, all that he is, thinks, hopes for, or shall ever attain, is to be found, we are told, rather in the natural order which sustains him.

Idealism is in cordial agreement with naturalism so far as the desire to think clearly and honestly is concerned, and so far as together they desire to interpret human life and experience without straying into vagary. But it is just this desire to deal with facts, and to take all available facts into account, which leads idealism to make its criticism of the naturalistic position. Naturalism, it maintains, fails just here. It does not take all the facts into account, or give to them an adequate consideration. Fundamentally, naturalism's method of explanation attempts to account for the greater by the less, the more developed by the less developed. That is, the idealist points out, naturalism believes that it has explained a thing when it has analyzed it into more simple parts which together compose it. But naturalism is oblivious to that novelty which is not in the parts, but only in the unity when together they constitute the particular

¹ John Dewey, "Values, Liking, and Thought," in the *Journal of Philosophy*, Vol. XX, p. 618.

new whole, whatever it may be. To attempt to explain the more complex or more developed by the less is to assume that the novel characteristics appearing in the new *structure* require no specific explanation. It is to explain away, or lose sight of, that which originally it was intended to account for. That is, form or unity, and the particular characteristics which have to do with this unity, are no less real and no less significant than the parts or activities which enter into its organization.

In the case of man, naturalism succeeds in securing an explanation in terms of reduction to simpler biological, chemical, and physical properties of his being. On these, he indeed may depend for physical life itself, but that is not to say that he, as a *human structure* in nature, may not possess characteristics which these properties singly cannot explain. Naturalism thus succeeds in its explanation of man only by leaving out of account, as a kind of remainder after the problem is finished, all those æsthetic, moral, religious, indeed all those social values which constitute the essential part of human life. It may say that they arise as man's reaction, and offer a physiological description of the conditions under which they do thus arise from motor-affective activities in the body. But this does not answer the real question, which is whether there is anything in nature akin to our experiences of value—it merely describes the way in which we have these experiences. Could a universe, totally destitute of the characteristic of values—a totally meaningless and valueless physical order, produce beings whose basic characteristic is that of experiencing in terms of values?

The idealist agrees with the naturalist that we can gain nothing from the supposition of gaps in nature. The question is not that of whether man is within and a part of nature but, granting this, the real question is what kind of a nature could produce a being with man's mental and spiritual characteristics. To the idealist it appears clear that nature is best interpreted, most clearly seen at work and understood, not in her lowest and most simple, but in her highest and

most developed manifestations. We do not find what *nature* is by *reducing* man or any other of her manifestations, but rather by regarding man at his best as her manifestation. Nature must be sufficient in her resources to produce beings of mind and spirit. These higher characteristics, no less than chemical or physical reactions, must disclose her powers and so her nature. Idealism, then, would unite man with nature, not by leveling man down, but by recognizing that nature herself possesses the qualities which ennoble his life. Thus man finds in the world, not an alien order, but a kindred Being. In this he finds the deepest foundation of his faith, and the greatest assurance of the eternal significance of the best that he knows, and of the fact that he is a being who is able to know that best. However he may conceive of that Being in the nature of the universe which is the source of his value experiences, and of his powers to apprehend values, it is in his sense of unity with that Being that his mind and spirit find their relation and harmony with reality, as it is in the expression of chemical and physical reactions that his body is joined to the order of physical nature. This higher aspect of the world of his experience, this Being in the world from which his spirit comes and with which he finds spiritual unity, whether regarded as a *personal* or as an *impersonal* presence, he rightly calls God.¹

¹For literature dealing with the subject-matter of this chapter, cf. bibliography at the end of the book.

FOUNDATIONS OF A PHILOSOPHICAL LIBRARY

The following books are suggested as fundamentally important to a philosophical library. For the greater part the selection is based upon philosophical significance, but in certain cases (e.g., reference works, anthologies, and textbooks) practical usefulness to the student with limited library facilities has been the chief consideration. Necessarily the selection is a somewhat arbitrary one.

I. PHILOSOPHICAL CLASSICS

Plato. Preferably his complete *Works* (Jowett translation), Oxford.

Otherwise: *The Republic** (Jowett), Scribner; *The Republic* (Davies and Vaughan), Macmillan; *Selections*,* Scribner.

Aristotle. Preferably his *Works* (Ross translation), Oxford.

Otherwise: *Ethica Nicomachea* (Ross), Oxford; *Metaphysica* (Ross), Oxford; *Selections** (Ross), Scribner; *Aristotle on His Predecessors*, Open Court.

Lucretius. *On the Nature of Things* (translated by C. Bailey), Oxford.

Machiavelli, Nicolo. *The Prince*, about 1520.

Bacon, Francis. *Novum Organon*, 1620.

—. *Selections*.*

Descartes, René. *Discourse on Method*, 1637, Scribner*; Open Court.

—. *The Meditations*, 1641, Scribner*; Open Court.

Hobbes, Thomas. *Leviathan*, 1651, Dutton; or *Selections* (from the *Leviathan* and *Elements of Philosophy concerning the Body*), Scribner.*

Spinoza, Baruch. *Ethics*, 1677, Dutton.

—. *Selections*, Scribner.*

—. *Tractatus Politicus*, 1670.

Leibniz, Gottfried Wilhelm. *Works*, edited by C. J. Gerhardt (7 volumes), Berlin.

—. *Discourse on Metaphysics*, 1685, Open Court.

—. *Monadology*, 1714, Open Court (included with above).

—. *New Essays*, 1765.

Locke, John. *Essay concerning Human Understanding*, 1690, Open Court.

—. *Selections*, Scribner.*

—. *Civil Government*, 1690.

* Works designated by an asterisk are published in convenient form in Scribner's *Modern Student's Library*.

Berkeley, George. *Theory of Vision*, 1709.

—. *Principles of Human Knowledge*, 1710, Open Court.

—. *Three Dialogues between Hylas and Philonous*, 1713, Open Court.
These three works are contained in *Selections*, published by Scribner.*

Hume, David. *Treatise on Human Nature*, 1739–1740.

—. *Enquiry concerning Human Understanding*, 1749.

—. *Enquiry concerning the Principles of Morals*, 1751, Open Court.
Selections from the *Treatise* and the *Enquiry concerning Human Understanding* are published by Open Court and by Scribner (*Selections*).*

Montesquieu. *Spirit of Laws*, 1748.

Rousseau, Jean Jacques. *The Social Contract*, 1762.

—. *Emile*, 1762.

Smith, Adam. *The Wealth of Nations*, 1776.

Kant, Immanuel. *Critique of Pure Reason*, 1781. The best translations are those by Norman Kemp Smith (Macmillan, 1929) and by F. Max Muller (Macmillan, 1896). *Selections*, Scribner.*

—. *Critique of Practical Reason*, 1788 (published as *Kant's Theory of Ethics*, translated by T. K. Abbott, Longmans, Green and Company, London).

—. *Critique of Judgment*, 1788 (translation by J. H. Bernard), Macmillan, 1892 (revised, 1914).

Fichte, Johann Gottlieb. *The Vocation of Man*, 1800, Open Court.

Hegel, Georg Wilhelm Friedrich. *Phenomenology of Mind*, 1807.

—. *Logic*, 1812.

—. *Philosophy of Rights*, 1821.

—. *Selections*, Scribner.*

Comte, Auguste. *Positive Philosophy*, 1830–1842. London, 1853.

Carlyle, Thomas. *Sartor Resartus*, 1833.

Mill, John Stuart. *A System of Logic*, 1843

—. *On Liberty*, 1859.

—. *Utilitarianism*, 1863.

Schopenhauer, Arthur. *The World as Will and as Idea*, 1844.

—. *Selections*, Scribner.*

Lotze, Rudolph Hermann. *Logic*, 1874.

—. *Metaphysics*, 1879. Translated by B. Bosanquet and published as 2 volumes.

Spencer, Herbert. *First Principles*, 1862.

—. *Principles of Sociology*, 1876–1896.

Darwin, Charles. *Origin of Species*, 1859.

—. *Descent of Man*, 1871.

Huxley, Thomas. *Evolution and Ethics* (Romanes Lecture), 1893.

—. *Evidence as to Man's Place in Nature*, 1864.

Sidgwick, Henry. *Methods of Ethics*, 1874.

Stephen, Leslie. *The Science of Ethics*, 1882.
 Green, Thomas Hill. *Prolegomena to Ethics*, 1883.
 —. *Principles of Political Obligation*, 1886.
 James, William. *Principles of Psychology*, 1890 (2 volumes).
 Bradley, Francis H. *The Principles of Logic*, 1883.
 —. *Ethical Studies*, 1876.
 —. *Appearance and Reality*, 1893.
 Bosanquet, Bernard. *Logic*, 1888.
 Alexander, Samuel. *Moral Order and Progress*, 1889.
 Bergson, Henri. *Time and Free Will*, 1889.
 Royce, Josiah. *The World and the Individual*, 1900.

II. SOME IMPORTANT BOOKS OF THE PRESENT CENTURY

Adams, G. P. *Idealism and the Modern Age*, Yale Press, 1919.
 Alexander, Samuel. *Space, Time and Deity* (2 volumes), Macmillan, 1920.
 Ames, E. S. *Psychology of Religious Experience*, Houghton Mifflin, 1910.
 Balfour, A. J. *Theism and Humanism*, Doran, 1915.
 Bergson, H. *Matter and Memory*, Macmillan, 1911 (translation).
 —. *Introduction to Metaphysics*,* Putnam, 1912.
 —. *Creative Evolution*, Holt, 1913 (translation).
 Boodin, J. E. *A Realistic Universe*, Macmillan, 1916 (revised, 1931).
 Bosanquet, Bernard. *Philosophical Theory of the State*, Macmillan, 1899.
 —. *A History of Aesthetic*, Macmillan, 1892, 1917.
 —. *The Principle of Individuality and Value*, Macmillan, 1912.
 —. *The Value and Destiny of the Individual*, Macmillan, 1913.
 —. *The Meeting of Extremes in Contemporary Philosophy*, Macmillan, 1921.
 Brightman, E. S. *A Philosophy of Ideals*, Holt, 1928.
 Broad, C. D. *Scientific Thought*, Harcourt, Brace, 1923.
 —. *Mind and Its Place in Nature*, Harcourt, Brace, 1925.
 Burtt, E. A. *Metaphysical Foundations of Modern Physical Science*, Harcourt, Brace, 1925.
 Calkins, M. W. *Persistent Problems of Philosophy*, Macmillan, 1907 (revised, 1925).
 Carr, H. W. *The Philosophy of Benedetto Croce*, Macmillan, 1917.
 —. *The Philosophy of Change*, Macmillan, 1914.
 Coe, G. A. *The Psychology of Religion*, University of Chicago Press, 1916.
 Cohen, M. R. *Reason and Nature*, Harcourt, Brace, 1931.
 Creighton, J. E. *Studies in Speculative Philosophy*, Macmillan, 1925.
 Croce, Benedetto. *Aesthetic*, Macmillan (translation), 1922.
 Cunningham, G. W. *The Idealistic Argument in Recent British and American Philosophy*, Century, 1933.
 Dewey, John. *How We Think*, Heath, 1910.
 —. *Essays in Experimental Logic*, University of Chicago, 1916.

Dewey, John. *Human Nature and Conduct*, Holt, 1922.
—. *Reconstruction in Philosophy*, Holt, 1920.
—. *Creative Intelligence* (with others), Holt, 1917.
—. *Experience and Nature*, Open Court, 1925.
—. *The Quest for Certainty*, Minton Balch, 1929.

Driesch, Hans. *The Science and Philosophy of the Organism*, Macmillan, 1909, 1929.

Einstein, Albert. *A Special and General Theory of Relativity*, Holt, 1920.

Fite, W. *Individualism*, Longmans, Green, 1911.

Hocking, W. E. *The Meaning of God in Human Experience*, Yale, 1912.
—. *Human Nature and Its Remaking*, Yale, 1918.
—. *The Self, Its Body and Freedom*, Yale, 1928.

Hoernlé, R. F. A. *Studies in Contemporary Metaphysics*, Harcourt, Brace, 1920.
—. *Idealism as a Philosophy*, Harcourt, Brace, 1927.

Holt, E. B. *The Concept of Consciousness*, Macmillan, 1914.

James, William. *Pragmatism*, Longmans, Green, 1907.
—. *A Pluralistic Universe*, Longmans, Green, 1909.
—. *Some Problems of Philosophy*, Longmans, Green, 1911.
—. *The Will to Believe*, Longmans, Green, 1897.
—. *Essays in Radical Empiricism*, Longmans, Green, 1912.
—. *Human Immortality*, Houghton, Mifflin, 1898.

Laird, John. *Problems of the Self*, Macmillan, 1917.
—. *A Study in Realism*, Cambridge, 1920.

Leighton, J. A. *Man and the Cosmos*, Appleton, 1922.

Lewis, C. I. *Mind and the World Order*, Scribner, 1929.

Lovejoy, A. O. *The Revolt against Dualism*, Norton, Open Court, 1930.

MacDougall, W. *Body and Mind*, Macmillan, 1911.
—. *Outline of Abnormal Psychology*, Scribner, 1926.

Mackenzie, J. S. *Outlines of Social Philosophy*, Macmillan, 1918.

Montague, W. P. *Ways of Knowing*, Macmillan, 1925.

Moore, A. W. *Pragmatism and Its Critics*, University of Chicago, 1910.

Moore, G. E. *Principia Ethica*, Cambridge, 1903.
—. *Philosophical Studies*, Harcourt, Brace, 1922.

Morgan, C. L. *Emergent Evolution*, Holt, 1923.
—. *Life, Mind and Spirit*, Holt, 1926.

Northrup, F. S. C. *Science and First Principles*, Macmillan, 1931.

Otto, M. C. *Natural Laws and Human Hopes*, Holt, 1927.

Parker, D. H. *Human Values*, Harper, 1931.

Pearson, Karl. *Grammar of Science*, A. and C. Black, 1892 (revised, 1911).

Perry, R. B. *Present Philosophical Tendencies*, Longmans, Green, 1912.
—. *Moral Economy*, Scribner, 1909.
—. *General Theory of Value*, Longmans, Green, 1926.

Prall, D. W. *Aesthetic Judgment*, Crowell, 1929.

Pratt, J. B. *Matter and Spirit*, Macmillan, 1922.

Pringle-Pattison, A. S. *The Idea of God*, Oxford, 1917.

Rieber, C. H. *Footnotes to Formal Logic*, California, 1918.

Rogers, A. K. *The Theory of Ethics*, Macmillan, 1922.

Royce, Josiah. *The Conception of God*, Macmillan, 1897.

—. *The Conception of Immortality*, Houghton Mifflin, 1900.

—. *The Spirit of Modern Philosophy*, Houghton Mifflin, 1892.

—. *The Religious Aspect of Philosophy*, Houghton Mifflin, 1885.

—. *The Philosophy of Loyalty*, Macmillan, 1908.

—. *The World and the Individual*, Macmillan, 1900.

Russell, Bertrand. *Problems of Philosophy*, Holt, 1912.

—. *Mysticism and Logic*, Longmans, Green, 1921.

—. *Our Knowledge of the External World*, Norton, 1929.

—. *Philosophy*, Norton, 1928.

Santayana, George. *The Sense of Beauty*, Scribner, 1898.

—. *Winds of Doctrine*, Scribner, 1913.

—. *Scepticism and Animal Faith*, Scribner, 1926.

Schiller, F. C. S. *Humanism*, Macmillan, 1903.

—. *Logic for Use*, Harcourt, Brace, 1930.

Sellars, R. W. *The Philosophy of Physical Realism*, Macmillan, 1932.

—. *The Principles and Problems of Philosophy*, Macmillan, 1926.

Sheldon, W. H. *The Strife of Systems and Productive Duality*, Harvard, 1918.

Smith, N. K. *Prolegomena to an Idealistic Theory of Knowledge*, Macmillan, 1924.

Spaulding, E. G. *The New Rationalism*, Holt, 1918.

Strong, C. A. *Why the Mind Has a Body*, Macmillan, 903.

Taylor, A. E. *Elements of Metaphysics*, Macmillan, 1903.

Urban, W. M. *The Intelligible World*, Macmillan, 1929.

—. *Valuation, Its Nature and Laws*, Macmillan, 1909.

Vaihinger, Hans. *The Philosophy of "As If,"* Harcourt, Brace, 1924 (translation).

Ward, James. *Naturalism and Agnosticism*, Macmillan, 1915.

Whitehead, A. N. *Science and the Modern World*, Macmillan, 1926.

—. *The Concept of Nature*, Cambridge, 1920.

—. *An Enquiry concerning the Principles of Natural Knowledge*, Cambridge, 1920.

—. *Religion in the Making*, Macmillan, 1926.

—. *Process and Reality*, Macmillan, 1929.

III. BOOKS OF GROUP AUTHORSHIP

Contemporary British Philosophy. Edited by J. H. Muirhead. Statements of their positions by leading British philosophers. Two volumes. Macmillan, 1924, 1926.

Contemporary American Philosophy. Edited by G. P. Adams and W. P. Montague. Personal statements of their positions by philosophers selected by members of the American Philosophical Association. Two volumes. Macmillan, 1930.

The New Realism. Edited by E. B. Holt. A joint statement of the position of the New Realism, by six leading representatives. Macmillan, 1912.

Essays in Critical Realism. Edited by Durant Drake. A co-operative statement of the position of Critical Realism. Macmillan, 1920.

Creative Intelligence. "Essays in the pragmatic attitude," by eight leading representatives. Holt, 1917.

Essays in Honor of John Dewey. Twenty-nine papers having to do with varying phases of pragmatic interpretation, presented and published in honor of John Dewey. Holt, 1929.

Contemporary Idealism in America. Twelve papers discussing the idealistic attitude and its contemporary interpretation of fundamental philosophical problems. Edited by C. L. Barrett. Macmillan, 1932.

IV. BOOKS OF REFERENCE AND ANTHOLOGIES

Baldwin, J. M. *Dictionary of Philosophy and Psychology*, Macmillan.

Rand, Benjamin. *Classical Modern Philosophers*, Houghton Mifflin.

—. *Classical Moralists*, Houghton Mifflin.

Bakewell, C. M. *Source Book in Ancient Philosophy*, Scribner.

Nahm, M. C. *Selections from Early Greek Philosophy*, Crofts.

Robinson, D. S. *An Anthology of Modern Philosophy*, Crowell.

—. *An Anthology of Recent Philosophy*, Crowell.

Avey, A. E. *Readings in Philosophy*, Adams Co. (Columbus, Ohio), 1921.

V. HISTORIES OF PHILOSOPHY

Windelband, W. *A History of Philosophy* (translated by Tufts), Macmillan, 1893, 1901.

Höffding, H. *A History of Modern Philosophy* (translated by Meyer), 2 volumes, Macmillan, 1900.

Erdmann, J. E. *A History of Philosophy* (translated by Hough), 3 volumes, Macmillan, 1890, 1910.

Periods:

Burnet, J. *Early Greek Philosophy*, A. and C. Black, 1892, 1914.

—. *Greek Philosophy*, Macmillan, 1914.

Scoot, R. M. *Greek Philosophy before Plato*, Princeton, 1928.

Robin, L. *Greek Thought*, Knopf, 1928.

Gomperz. *Greek Thinkers*, 4 volumes.

Zeller, E. *Outlines of the History of Greek Philosophy*, Harcourt, Brace, 1931 edition.

FOUNDATIONS OF A PHILOSOPHICAL LIBRARY 365

More, P. E. *Hellenistic Philosophies*, Princeton, 1923.
—. *The Religion of Plato*, Princeton, 1921.
Taylor, A. E. *Plato: the Man and His Work*, Dial, 1927.
Muirhead, J. H. *The Platonic Tradition in Anglo-Saxon Philosophy*, Macmillan, 1931.
Hendel, C. W. *Studies in the Philosophy of David Hume*, Princeton, 1925.
Boas, G. *French Philosophies of the Romantic Period*, Johns Hopkins, 1925.
Hibben, J. G. *Philosophy of the Enlightenment*, Scribner, 1910.
Rogers, A. K. *English and American Philosophy since 1800*, Macmillan, 1922.

Textbooks:

Rogers, A. K. *Student's History of Philosophy*, Macmillan, 1901, 1932.
Weber and Perry. *History of Philosophy*, Scribner, 1925.
Thilly, Frank. *History of Philosophy*, Holt, 1914.
Marvin, W. T. *A History of European Philosophy*, Macmillan, 1917.
Stace, W. T. *A Critical History of Greek Philosophy*, Macmillan, 1925.
Singer, A. E. *Modern Thinkers and Present Problems*, Holt, 1923.

LITERATURE

CHAPTER I. PHILOSOPHY

Cunningham, G. W. *Problems of Philosophy*,* Chap. I. Holt, 1924.

Dewey, J. *Reconstruction in Philosophy*. Holt, 1920. A restatement in pragmatic terms of the aims and methods of present-day philosophy.

Fullerton, G. S. *An Introduction to Philosophy*,* Chaps. I-II and XXII-XXIV. Macmillan, 1906.

Hibben, J. G. *Problems of Philosophy*,* Scribner, 1898.

Hocking, W. E. *Types of Philosophy*,* Chap. I. Scribner, 1929.

Hoernlé, R. F. A. *Matter, Life, Mind and God*, Lecture I. Harcourt, Brace, 1923. A clear and interesting introductory discussion.

Lewis, C. I. *Mind and the World Order*, Chap. I. Scribner, 1929. This introduction to a highly significant book is very readable and free from undue technical terminology, but difficult in parts for the beginner.

Perry, R. B. *The Approach to Philosophy*. Scribner, 1905. Recommended.

—. *Present Philosophical Tendencies*, Chaps. I-II. Longmans, Green, 1912. Especially recommended.

Royce, J. *The Spirit of Modern Philosophy*, Intro. Houghton Mifflin, 1892. A major philosopher at his literary best.

Ryan, J. H. *An Introduction to Philosophy*,* Chap. I. Macmillan, 1914. Written from the point of view of a Roman Catholic churchman.

Sellars, R. W. *Essentials of Philosophy*,* Chaps. I-II. Macmillan, 1917.

Sidgwick, H. *Philosophy, Its Scope and Relations*. Macmillan, 1902. General consideration of the nature of philosophy and its relations to the social sciences, by a leading philosopher of the last century. Somewhat advanced but not highly technical.

Windelband, W. *Introduction to Philosophy*, Prolegomena. Allen and Unwin, 1921. Thoroughly serious but readable.

—. *History of Philosophy*, Intro. Macmillan, 1898, 1901. A readable introduction to probably the best of general histories of philosophy.

CHAPTER II. THE MEANING OF "EXPLANATION" FOR SCIENCE AND FOR PHILOSOPHY

Boodin, J. E. *A Realistic Universe*, pp. xv-lvi (in second edition). Macmillan, 1931. Offers an excellent but somewhat advanced summary of more recent scientific developments, especially in physics.

*Introductory textbooks are denoted by an asterisk.

Bosanquet, B. *Science and Philosophy*. Macmillan, 1927. A mature discussion, requiring a rather comprehensive understanding of the subject.

Bridgman, P. W. *The Logic of Modern Physics*, Intro. Macmillan, 1927. The field of physical science viewed from the standpoint of a relativist. Requires a background in physics.

Burtt, E. A. *Principles and Problems of Right Thinking*,* Part III, Chaps. IX-XIII. Harper, 1931 (revised edition). Also Cf. Burtt's significant but more advanced work, *The Metaphysical Foundations of Modern Physical Science*. Harcourt, Brace, 1925.

Chapman, F. M., and Henle, P. *The Fundamentals of Logic*,* Chaps. XIII-XVI. Scribner, 1933.

Cohen, M. R. *Reason and Nature*, pp. 76-170. Harcourt, Brace, 1931. A scholarly account, not unintelligible to the non-technical reader.

Cunningham, G. W. *Problems of Philosophy*,* Chaps. II-V. Holt, 1924.

Dotterer, R. H. *Philosophy by Way of the Sciences*,* Part I. Macmillan, 1929.

Eddington, A. S. *The Nature of the Physical World*, Intro. Macmillan, 1928. A very interesting and suggestive discussion, but not to be taken as representing the unanimous view of scientists.

Haldane, J. S. *The Sciences and Philosophy*. Doubleday, Doran, 1929. A mature discussion from the point of view of an eminent biologist.

Latta and Macbeth. *Elements of Logic*,* Chaps. XIII-XVI. Scribner (revised edition), 1933.

Northrup, F. S. C. *Science and First Principles*. Macmillan, 1931. An important discussion for the advanced reader.

Pearson, K. *Grammar of Science*, Chaps. I-III. A. and C. Black, 1892, 1900. An influential and provocative book, but not to be taken without reservations.

Perry, R. B. *Present Philosophical Tendencies*, Chap. III. Longmans, Green, 1912.

Piper, R. F., and Ward, P. W. *The Fields of Knowledge*,* Parts I-II. Knopf, 1929.

Poincaré, H. *The Foundations of Science*. Science Press, 1913 (translation).

Russell, B. *Philosophy*, Chap. XV. Norton, 1927. Interesting and intelligibly stated for the beginner.

Thomson, J. A. *Introduction to Science*. Holt, 1911. Especially recommended for the beginner.

Whitehead, A. N. *Science and the Modern World*, Chaps. I and IX. Macmillan, 1925. Extremely significant but difficult for the beginner.

—. *The Concept of Nature*. Cambridge, 1920. Very valuable but difficult.

CHAPTER III. SUBSTANCE AND QUALITIES

Alexander, S. *Space, Time and Deity*, Vol. I, Book II, VI-A. Macmillan, 1920. One of the most important of contemporary works, but difficult.

Boas, G. *The Major Traditions of European Philosophy*,* Chaps. I-II. Harper, 1929.

Bradley, F. H. *Appearance and Reality*, Chaps. I-III. Allen and Unwin, 1893, 1897. Difficult but of the highest importance.

Fullerton, G. S. *An Introduction to Philosophy*,* Chaps. IV and XIV. Macmillan, 1906.

Leighton, J. A. *The Field of Philosophy*,* pp. 33 ff. Appleton (revised edition), 1930.

Russell, B. *The A B C of Atoms*. Dutton, 1923. A clear and excellent presentation of the modern conception for the non-technical reader.

—. *Our Knowledge of the External World*, Lecture IV. Norton, 1929. An easily intelligible account of the relation of the world of physics to that of sense perception.

Sellars, R. W. *Essentials of Philosophy*,* Chap. XIX. Macmillan, 1917.

Taylor, A. E. *Elements of Metaphysics*, Book II, Chap. IV. Macmillan, 1903. A standard work, too difficult for the average beginner.

Thilly, F. *History of Philosophy*,* Chaps. III-VI. Holt, 1914.

CHAPTER IV. MATERIALISM

Historical:

Bakewell, C. M. *Source Book in Ancient Philosophy*, VII ("The Atomists"); XVIII (Epicurus); XIX (Lucretius). Scribner, 1907.

Burnet, J. *Early Greek Philosophy*, Chaps. V, VI, and IX. A. and C. Black, 1920.

Haeckel, E. *The Riddle of the Universe*. Harper, 1899, 1901.

Hobbes, T. *Philosophy concerning the Body and Leviathan*. Cf. *Selections* edited by F. J. E. Woodbridge. Scribner, 1930. Also "Hobbes" in Rand, *Modern Classical Philosophers*; and Robinson, *Anthology of Modern Philosophy*.

La Mettrie, *Man as a Machine*.

Lange, F. A. *History of Materialism*. Harcourt, Brace, 1925 (third edition).

Lucretius. *On the Nature of Things*, Books I-II (Bailey trans.). Oxford, 1910.

Robin, L. *Greek Thought*, Book II, Chap. VI, and Book IV, Chap. II (trans. by Dobie), Knopf, 1928.

Rogers, *Student's History of Philosophy*,*—on the Greek Atomists, Epicurus, and Hobbes. Macmillan, 1901; third edition, 1932.

Scoot, R. M. *Greek Philosophy before Plato*, Chap. XI. Princeton, 1928.

Windelband, W. *History of Philosophy*, Part I, Chap. III, Sec. 10. Macmillan, 1893, 1901.

Systematic:

Crile, G. W. *Man—an Adaptive Mechanism*. Macmillan, 1916.

Cunningham, G. W. *Problems of Philosophy*,* Chaps. X–XI. Holt, 1924.

Eddington, A. S. *Nature of the Physical World*, Chaps. VIII, XI–XV.

Macmillan, 1928. Critical of materialism, in view of contemporary scientific thought.

Elliot, H. *Modern Science and Materialism*. Longmans, Green, 1927.

Supports materialism in view of contemporary scientific thought.

Perhaps the most clear and interesting recent presentation of the position of the materialist, but lacking in penetration.

Haldane, J. S. *Materialism*. Harper, 1932. The view of a biologist.

Hoernlé, R. F. A. *Matter, Life, Mind and God*, especially Lecture II. A readable critique of the materialistic attitude, by a distinguished idealist. Professor Hoernlé's *Studies in Contemporary Metaphysics*, Chaps. III–VII, offers a more advanced critique of mechanism.

Lodge, O. J. *Life and Matter*. Putnam's, 1906. Sir Oliver Lodge here offers one of the most satisfactory replies to Haeckel.

Loeb, J. *The Mechanistic Conception of Life*. Chicago, 1912. A biologist and leading champion of mechanism here speaks for the position.

MacDougall, W. *Modern Materialism and Emergent Evolution*. Van Nostrand, 1929. The expression of an eminent opponent of mechanism and materialism in the field of psychology.

Paulsen, F. *Introduction to Philosophy*,* pp. 60 ff. Holt, 1895.

Perry, R. B. *Present Philosophical Tendencies*, pp. 57–84. Longmans, Green, 1912. Excellent critical discussion of issues involved in materialism.

Russell, B. *Analysis of Matter*. Paul, Trench, Trübner, 1927. The account of a naturalist who is opposed to materialism.

—. *Problems of Philosophy*,* Chaps. II–III. Holt.

Sellars, R. W. *Essentials of Philosophy*,* Chap. XV. Macmillan, 1917.

Soddy, F. *Matter and Energy*. Holt, 1912. Descriptive.

Streeter, B. H. *Reality*, Chap. I. Macmillan, 1927. Critique of materialism.

Thomson, G. P. *The Atom*. Holt, 1930. Descriptive of the modern view of matter.

CHAPTER V. DUALISM

Historical:

Plato. Especially the *Republic*, Books VI–VII, *Phædo*, and for the more advanced reader, *Theætetus*.

Of very numerous works on Plato's philosophy, the following may be mentioned as useful to the general student.

Grote, G. *Plato and the Other Companions of Sokrates*. Little, Brown.

More, P. E. *Platonism*. Princeton, 1917.

Pater, W. *Plato and Platonism*. Macmillan, 1893.

Taylor, A. E. *Plato: the Man and His Work*. Dial, 1927.

Windelband, W. *History of Philosophy*, Part I, Chap. III, Secs. 9 and 11. Macmillan, 1893, 1901.

Zeller, E. *Plato and the Older Academy*. Longmans, Green (new edition), 1888.

Descartes, R. *Meditations*; reply to Hobbes in the *Third Set of Objections*; *Treatise on Man*; *Automatism of Brutes*. Cf. *Selections* (edited by R. M. Eaton). Scribner, 1927.

Smith, N. K. *Studies in the Cartesian Philosophy*. Macmillan, 1902.

Locke, J. *Enquiry concerning Human Understanding*, especially Book II. Also his letter on *The Idea of Substance*. Cf. *Selections* (edited by S. P. Lamprecht). Scribner, 1928.

Hibben, J. G. *Philosophy of the Enlightenment*. Scribner, 1910.

Any history of philosophy, cf. discussion of Descartes and Locke. Those by Höffding, Windelband, Thilly,* Weber and Perry,* and Rogers* are among the more satisfactory here.

Systematic:

Drake, D. *Mind and Its Place in Nature*, Macmillan, 1925. A more advanced discussion from the position of a Critical Realist.

Fullerton, G. S. *An Introduction to Philosophy*,* Chap. XIV. Macmillan, 1906.

Hocking, W. E. *Types of Philosophy*,* Chaps. XVI-XVIII. Scribner, 1929.

Leighton, J. A. *The Field of Philosophy*,* Chap. XV. Appleton, 1923, 1930.

Lovejoy, A. O. *The Revolt against Dualism*, especially Chaps. I, VIII. Open Court and Norton, 1930. Very significant but difficult.

Pratt, J. B. *Matter and Spirit*. Macmillan, 1922. A valuable presentation of dualistic thought.

Sheldon, W. H. *Strife of Systems and Productive Duality*. Harvard, 1918. A very significant work for the advanced reader.

For further references having to do especially with the duality of mind and body, cf. literature for Chapter XIII.

CHAPTER VI. PANTHEISM

Spinoza:

Spinoza, B. *Ethics* (edited by W. H. White, revised by A. H. Stirling). —. Milford (fourth edition), 1929. Also cf. Everyman edition. —. *Short Treatise on God, Man, and His Well-Being* (edited by A. Wolf). Black, 1910.

The Correspondence of Spinoza (edited by A. Wolf). Allen and Unwin, 1928.

Also note *The Chief Works of Benedict de Spinoza* (edited by R. H. M. Elwes). Bell, 1917.

Martineau, J. *A Study of Spinoza*. 1882. Interesting but not altogether reliable.

Joachim, H. H. *A Study of the Ethics*. Oxford, 1901. Standard commentary.

Wolfson, H. A. *The Philosophy of Spinoza* (2 vols.). Harvard, 1934. A work of the highest scholarship and indispensable to any scholar who is interested in Spinoza. Too advanced for the beginning student.

Singer, A. E. *Modern Thinkers and Present Problems*, Chap. II. Holt, 1923. A beautifully written account, which will be found of general interest.

Höffding, H. *History of Modern Philosophy*, Vol. I, Book III, Chap. V.

Oriental Pantheism:

Macdonell, A. A. *Hymns from the Rigveda*—selected and metrically translated. Oxford, 1923. Cf. also translations by F. Max Muller, H. Oldenberg, P. Peterson, E. J. Thomas, H. H. Wilson, etc.

Barnett, L. D. *Brahma-Knowledge*. Dutton, 1911.

Hume, R. E. *The Thirteen Principal Upanishads*. Oxford, 1921, 1931.

Arnold, E. *The Song Celestial*. Little, Brown, 1900. Also in the "Harvard Classics," Vol. 45—*Sacred Writings*, Vol. 2, pp. 799 ff.

Ryder, A. W. *The Bhagavad-gita* (in rhyme). Chicago, 1929.

The above works are selected somewhat arbitrarily from a very large number of available translations and editions of Hindu classics.

Moore, G. F. *History of Religions*, Chaps. XI–XIV. Scribner, 1913, Vol. II, 1919. Excellent and recommended for beginners.

Hopkins, E. W. *History of Religion*, Chaps. XI, XIII.

Wright, W. K. *A Student's Philosophy of Religion*,* Chap. VII. Macmillan, 1922.

Hobhouse, L. T. *Morals in Evolution*, Part II, Chap. III. Holt, 1907, 1915. Excellent and intelligible to the beginner.

Systematic and General Treatment of Pantheism:

Burroughs, J. *Accepting the Universe*. Houghton Mifflin, 1920. The faith of a lover of nature.

Emerson, R. W. *The Over-Soul*—an essay.

Leuba, J. H. *A Psychological Study of Religion*, Chap. XIII. Macmillan, 1912.

McGiffert, A. C. Article "Immanence" in Hastings' *Encyclopædia of Religion and Ethics*. Scribner. The view of a distinguished theologian.

Picton, J. A. *Pantheism*. Open Court, 1908.

Royce, J. *The Spirit of Modern Philosophy*, Lecture XIII. Houghton Mifflin, 1892. The author here suggests a pantheistic trend in modern idealism. Especially recommended.

CHAPTER VII. SPIRITUAL PLURALISM

Historical:

Berkeley, G. *The Principles of Human Knowledge* and *Three Dialogues between Hylas and Philonous* (edited by M. W. Calkins). Scribner, 1929. Also in 2 vols., Open Court.

Calkins, M. W. *The Persistent Problems of Philosophy*. Macmillan, 1925 (fifth edition). A sympathetic exposition, scholarly but intelligible to the less advanced reader.

Leibniz, G. W. *Monadology* and *Discourse on Metaphysics* (translated by Montgomery), Open Court; also cf. Duncan's edition or Latta's edition of the *Monadology*, etc.

Royce, J. *The Spirit of Modern Philosophy*, Lecture III, iv (on Berkeley). Houghton Mifflin, 1892.

Russell, B. *Critical Exposition of the Philosophy of Leibniz*. Cambridge, 1900. A scholarly critical study of great value to the more mature student.

Systematic:

Bowne, B. P. *Theory of Thought and Knowledge*. Harper, 1897.

Carr, H. W. *A Theory of Monads*. Macmillan, 1922.

—. *Cogitans Cogitata*. Favil Press, 1930. Very interesting presentation of the position of a recent spiritual pluralist.

Creighton, J. E. "Two Types of Idealism," in *The Philosophical Review*, Volume 26 (1917), pp. 514 ff.

Howison, G. H. *The Limits of Evolution*. Intro. Macmillan, 1901. A condensed statement of one of the most profound of modern spiritual pluralistic systems. Cf. also Professor Howison's contribution to J. Royce's *The Conception of God*.

James, W. *Some Problems of Philosophy*, Chaps. VII-VIII. Longmans, Green, 1911. Especially recommended.

—. *A Pluralistic Universe*, Chaps. IV-VI. Longmans, Green, 1909. A pluralistic argument in James' inimitable style.

Knudsen, A. C. *The Philosophy of Personalism*, Abingdon, 1925. A good statement of personalistic philosophy.

Laird, J. *Problems of the Self*, Chap. XII. Macmillan, 1917. A scholarly study of modern theories of the self as substance.

Leighton, J. A. *Field of Philosophy*,* Chaps. XXI and XXVIII. Appleton, 1923, 1930.

Parker, D. H. *The Self and Nature*. Harvard, 1917. A valuable study.

Royce, J., and others. *The Conception of God*. Macmillan, 1909. A symposium presenting a significant diversity of positions.

Sellars, R. W. *Essentials of Philosophy*,* Chap. XV, pp. 177 ff. Macmillan, 1917.

Ward, J. *The Realm of Ends*, Chap. I. Cambridge, 1910.

Wilson, G. A. *The Self and Its World*. Macmillan, 1926. A clear account from the point of view of personalism.

CHAPTER VIII. CONTEMPORARY VIEWS OF SUBSTANCE

For literature having to do with the subject-matter of this chapter, cf. *Pragmatism, Realism, and Idealism* under Chapters XIV–XV, and *Naturalism and Idealism* under Chapter XVIII.

CHAPTER IX. RELATIONS

Alexander, S. *Space, Time and Deity*, Vol. I, Book II, Chap. IV. Macmillan, 1920. Of highest importance but advanced.

Boodin, J. E. *A Realistic Universe*, Chap. VI. Macmillan, 1916, 1931. Valuable analysis for the more mature student.

Bradley, F. H. *Appearance and Reality*, Book I, Chap. III; Book II, Chap. XXVI. Allen and Unwin, 1893, 1897. Difficult but of the greatest importance.

Chapman, F. M., and Henle, P. *Fundamentals of Logic*,* Chap. VII. Scribner, 1933.

Conger, G. P. *A Course in Philosophy*,* Chap. XXXI. Harcourt, Brace, 1924.

Perry, R. B. "A Realistic Theory of Independence" in *The New Realism* (edited by E. B. Holt). Macmillan, 1912. One of the best expressions of the realistic view on this point.

—. *Present Philosophical Tendencies*, Chap. XI, Sec. 2. Longmans, Green, 1912.

Spaulding, E. G., *The New Rationalism*, Chaps. XXVI–XXVII. Holt, 1918. Valuable presentation of the realistic position, but too difficult for the beginner.

Taylor, A. E., *Elements of Metaphysics*, Book II, Chap. IV, Sec. 8. Methuen, 1903. A good idealistic argument, but difficult.

Despite the importance of this subject, literature on it suited to the needs of the beginning student is extremely limited.

CHAPTERS X AND XI. SPACE AND TIME

Alexander, S. *Space, Time and Deity*, Book I, Chaps. I–VI; Book II, Chap. X. Macmillan, 1920. Of great importance to the advanced reader.

Bergson, H. *Time and Free Will*. Macmillan, 1910. A classic treatment.

Boodin, J. E. *A Realistic Universe*, Parts III-IV. Macmillan, 1916, 1931.
Useful, but possibly too advanced for the average beginner.

Bradley, F. H. *Appearance and Reality*, Book I, Chap. IV; Book II,
Chap. XVIII. Allen and Unwin, 1893, 1897. Important but difficult.

Carr, H. W. *The Philosophy of Change*. Macmillan, 1914. One of the most
satisfactory accounts of the Bergsonian position.

Cassirer, E. *Substance and Function and Einstein's Theory of Relativity*,
Chap. IV, Sec. vi; also Supplement on Einstein's theory (translated
by W. C. and M. C. Swabey). Open Court, 1923. Advanced.

Cunningham, G. W. *Problems of Philosophy*,* Chap. XII. Holt, 1924.

Drake, D. *Invitation to Philosophy*,* Chap. XI. Houghton Mifflin, 1933.

Eddington, A. S. *The Nature of the Physical World*, Chaps. II-III. Mac-
millan, 1928. Interesting account from a contemporary scientist's
point of view.

Einstein, A. *Relativity; Special and General Theory*. Holt, 1920. Classic
significance but difficult.

Fullerton, G. S. *An Introduction to Philosophy*,* Chaps. VI-VII. Mac-
millan, 1906.

Hasen, S. Z. *Realism*, pp. 131 ff. Cambridge, 1928. For an account of
the philosophy of Alexander.

Mackenzie, J. S. *Cosmic Problems*, Chap. V. Macmillan, 1931.

Russell, B. *Our Knowledge of the External World*, Chap. VII. Norton, 1929.
Recommended.

Schlick, M. *Space and Time*. Oxford, 1920. Important but advanced.

Sellars, R. W. *The Philosophy of Physical Realism*, Chap. XIII. Mac-
millan, 1932. A valuable realistic account for the more mature reader,
but difficult for the beginner.

—. *Essentials of Philosophy*,* Chaps. XVII-XVIII. Macmillan, 1917.

Steinmetz, C. P. *Relativity and Space*. McGraw and Hill, 1923.

Taylor, A. E. *Elements of Metaphysics*, Book III, Chap. IV. Methuen,
1905. Advanced.

CHAPTERS XII AND XIII. CAUSALITY

General Works:

Alexander, S. *Space, Time and Deity*, Vol. I, Book II, Chap. VI-B.
Macmillan, 1920.

Bradley, F. H. *Principles of Logic*, Vol. II, Book III, Part II, Chap. II.
Oxford, 1922 (revised edition). Advanced.

—. *Appearance and Reality*, Chap. VI. Allen and Unwin, 1893, 1897.
Especially recommended for the more advanced reader.

Cohen, M. R. *Reason and Nature*, Book II, Chaps. II-III. Recommended.

Cunningham, G. W. *Problems of Philosophy*,* Chap. IX. Holt, 1924.

Drake, D. *Invitation to Philosophy*,* Chap. XV. Houghton Mifflin, 1933.
 Eddington, A. S. *The Nature of the Physical World*, Chap. XIV. Macmillan, 1928.
 Hume, D. *Treatise of Human Nature*, Book I. Scribner, Open Court. The most influential of all works on the subject.
 Mill, J. S. *A System of Logic*, Book III, Chaps. III-V. Harper.
 Pearson, K. *The Grammar of Science*, Chap. IV. Black, 1892, 1900. Interesting treatment—serious but not too difficult.
 Sigwart, C. *Logic*, II, Part III.

Evolution:

Bergson, H. *Creative Evolution*. Holt, 1911. Important but somewhat difficult.
 Boodin, J. E. *Cosmic Evolution*. Macmillan, 1925. Useful to the more advanced student.
 Conklin, E. G. *The Direction of Human Evolution*. Scribner, 1921. Recommended.
 Cunningham, G. W. *Problems of Philosophy*,* Chaps. XIII-XIV. Holt, 1924.
 Darwin, C. *The Origin of Species*. 1859.
 —. *Descent of Man*. 1871.
 Drake, D. *Invitation to Philosophy*,* Chap. XVI. Houghton Mifflin, 1933.
 Hobhouse, L. T. *Development and Purpose*, Chaps. I-V. Macmillan, 1913, 1927.
 Kellogg, V. L. *Darwinism To-day*. Holt, 1907.
 Morgan, L. *Emergent Evolution*. Holt, 1923. One of the ablest presentations of its subject.
 —. *Life, Mind and Spirit*. Holt, 1926. Sequel to the previous reference, including a discussion of religious issues.
 Osborn, H. F. *The Origin and Evolution of Life*. Scribner, 1917.
 —. *From the Greeks to Darwin*. Macmillan, 1927.
 Thomson and Geddes, *Evolution*. Holt, 1911. Recommended for the beginner.

Mind and Body:

Bradley, F. H. *Appearance and Reality*, Book II, Chap. XXIII. Allen and Unwin, 1893, 1897.
 Broad, C. D. *Mind and Its Place in Nature*. Harcourt, Brace, 1925. Important but difficult.
 Clifford, W. K. "Body and Mind" in *Lectures and Essays*. A thoroughly naturalistic account.
 Cunningham, G. W. *Problems of Philosophy*,* Chaps. XVI-XVII. Holt, 1924.
 Drake, D. *Mind and Its Place in Nature*, Chaps. VII-VIII, XIX. Macmillan, 1929.

James, W. *Principles of Psychology*, Vol. I, Chaps. I-VI. Holt, 1890, 1918.

Especially recommended

Joad, C. E. M. *Mind and Matter*, Chaps. I-II.

McDougall, W. *Body and Mind*. Macmillan, 1911.

Mortis, C. W. *Six Theories of Mind*, University of Chicago, 1933.

Patrick, G. T. W. *Introduction to Philosophy*,* Chap. XVI. Houghton Mifflin, 1924.

Paulsen, F. *Introduction to Philosophy*,* Book I, Chap. I. Holt, 1907.

Pratt, J. B. *Matter and Spirit*. Macmillan, 1922. The dualistic account.

Russell, B. *Philosophy*, Chaps. XIX-XX. Norton, 1927. Introspection and Consciousness.

Sellars, R. W. *Essentials of Philosophy*,* Chaps. XXII-XXIII.

Strong, C. A. *Why the Mind Has a Body*. Macmillan, 1903.

Watson, J. *Psychology from the Standpoint of a Behaviorist*. Lippincott (third edition), 1929. Classic statement of Behaviorism.

Causality and Freedom:

Barrett, C. L. *Ethics*,* Chap. XIV. Harper, 1933.

Bergson, H. *Time and Free Will*. Allen and Unwin, 1910. Difficult for the beginner.

Boutroux, E. *The Contingency of the Laws of Nature*. Open Court, 1916. Important but somewhat difficult.

Carr, H. W. *The Unique Status of Man*. Macmillan, 1928. Clear and interesting.

Dewey, J. *Human Nature and Conduct*, Part IV, Sec. III. Especially recommended.

Everett, W. G. *Moral Values*,* Chap. XII. Holt, 1918.

Green, T. H. *Principles of Political Obligation*, pp. 1 ff. Excellent but difficult.

Hocking, W. E. *The Self, Its Body and Freedom*. Yale, 1928. Especially recommended.

Horne, H. H. *Free Will and Human Responsibility*. Macmillan, 1912.

Hume, D. *Enquiry concerning Human Understanding*, Sec. VIII. Scribner, Open Court.

James, W. *Principles of Psychology*, Vol. II, Chap. XXVI. Holt, 1890, 1918. Especially recommended.

Palmer, G. H. *The Problem of Freedom*. Houghton Mifflin, 1911.

Paulsen, F. *A System of Ethics*,* Book II, Chap. IX. Holt, 1899.

Urban, W. M. *Fundamentals of Ethics*,* Chap. XVII. Holt, 1930.

CHAPTERS XIV AND XV. KNOWLEDGE AND TRUTH

Alexander, S. *Space, Time and Deity*, Vol. II, Book III, Chaps. III-VIII.

On Truth—*ibid.*, Book III, Chap. IX-B.

Bergson, H. *Introduction to Metaphysics*. Putnam's, 1912. Especially recommended.

—. *Mind-Energy*. Macmillan, 1920.

Boodin, J. E. *Truth and Reality*. Macmillan, 1911.

Cohen, M. R. *Reason and Nature*, pp. 23 ff.

Cunningham, G. W. *Problems of Philosophy*,* Chaps. VII-VIII. Holt, 1924.

Drake, D. *Invitation to Philosophy*,* Chap. I-X. Houghton Mifflin, 1933.

Gentile, G. *The Theory of Mind as Pure Act*. Macmillan, 1922. Difficult.

Höffding, H. *Modern Philosophers*, pp. 229-302. Macmillan, 1915. Good account of James and Bergson.

Jung, C. G. *The Psychology of the Unconscious*. Moffat, Yard, 1916.

Koffka, K. *The Growth of the Mind*. Harcourt, Brace, 1925.

Leighton, J. A. *Man and the Cosmos*, Chaps. II-VIII. Appleton, 1922.

Montague, W. P. "A Realistic Theory of Truth and Error" in *The New Realism* (edited by E. B. Holt). Macmillan, 1912.

—. *Ways of Knowing*. Macmillan, 1925. Especially recommended.

Pratt, J. B. "Critical Realism and the Possibility of Knowledge" in *Essays in Critical Realism*. Macmillan, 1920.

Royce, J. *The Spirit of Modern Philosophy*, Chap. IV. Houghton Mifflin, 1892. Extraordinarily interesting account of Kant.

—. *Lectures on Modern Idealism*, Lectures I-II (edited by J. Loewenberg). Yale, 1919. Deals with Kant's theory of knowledge.

Pragmatism:

Brightman, E. S. *An Introduction to Philosophy*,* pp. 67 ff. Holt, 1925.

Dewey, J., and others. *Creative Intelligence*. Holt, 1917. Eight discussions of varied issues from the point of view of pragmatism.

Dewey, J. *Reconstruction in Philosophy*. Holt, 1920. Especially recommended.

—. *The Quest for Certainty*. Minton Balch, 1929. Important but too difficult for the beginner.

Hocking, W. E. *Types of Philosophy*,* Chaps. IX-X. Scribner, 1929. Exposition and criticism. Recommended.

James, W. *Pragmatism*. Longmans, Green, 1907. Of primary importance.

—. *The Will to Believe*. Longmans, Green, 1912. Religion from the point of view of James. Especially recommended.

—. *Some Problems of Philosophy*. Longmans, Green, 1911.

—. *The Meaning of Truth*. Longmans, Green, 1910. A collection of James' writings on Truth and Knowledge.

Lewis, C. I. *Mind and the World Order*, especially Chap. VIII. Scribner, 1929. Important for the advanced student.

Lovejoy, A. O. "The Thirteen Pragmatisms" in *Journal of Philosophy, Psychology, and Scientific Method*, Vol. V, pp. 5 ff. Critical.

Mead, G. S. *Mind, Self, and Society*. University of Chicago, 1934.

Moore, A. W. *Pragmatism and Its Critics*. University of Chicago, 1910.

Moore, G. E. *Philosophical Studies*, Chap. III. Harcourt, Brace, 1922.

Perry, R. B. *Present Philosophical Tendencies*, Appendix. Longmans, Green, 1912. Especially recommended.

Pratt, J. B. *What Pragmatism Is*. Macmillan, 1909.

Schiller, F. C. S. *Humanism*. Macmillan, 1912. Recommended.

—. *Logic for Use*, especially Chaps. VI-VIII. Harcourt, Brace, 1930.

Singer, A. E. *Modern Thinkers and Present Problems*, Chap. VIII. Holt, 1923.

Realism:

Drake, D., and others. *Essays in Critical Realism*. Macmillan, 1920. The classical statement of Critical Realism.

Hasan, S. Z. *Realism*. Cambridge, 1928. Account of contemporary realists.

Hocking, W. E. *Types of Philosophy*,* Chaps. XXVII-XXIX. Scribner, 1929. Critical and expository. Recommended.

Holt, E. B., and others. *The New Realism*. Macmillan, 1912. The classical statement of New Realism.

Holt, E. B. *The Concept of Consciousness*. Macmillan, 1914. A valuable contribution from the side of psychology.

James, W. *Essays in Radical Empiricism*. Longmans, Green, 1912. Especially the essay, "Does Consciousness Exist?"

Laird, J. *A Study in Realism*. Cambridge, 1920. A standard work, possibly too difficult for the beginner.

Lovejoy, A. O. *The Revolt against Dualism*, Chap. IX. Norton, 1930.

Montague, W. P. *The Ways of Knowing*. Macmillan, 1925. Especially recommended.

Moore, G. E. *Philosophical Studies*, Chap. I. Harcourt, Brace, 1922.

Perry, R. B. *Present Philosophical Tendencies*, Part V, Longmans, Green, 1912. Especially recommended.

Russell, B. *The Problems of Philosophy*,* Holt, 1912.

—. *Scientific Method in Philosophy*, Lectures I, III, IV. Oxford, 1914.

—. *Our Knowledge of the External World*, Chap. III. Norton, 1929. Clear and interesting statement.

Santayana, G. *Scepticism and Animal Faith*. Scribner, 1923. Stimulating but difficult.

Spaulding, E. G. *The New Rationalism*. Holt, 1918. Important for the advanced student.

Whitehead, A. N. *The Function of Reason*. Princeton, 1929. Recommended.

Idealism:
For literature on Idealism, cf. Chapter XVIII.

CHAPTER XVI. VALUES

Barrett, C. L. *Ethics*,* Chap. XVI. Harper, 1933.

Bosanquet, B. *Principle of Individuality and Value*. Macmillan, 1912.
Valuable for the mature student.

Bouglé, C. C. *The Evolution of Values*. Holt, 1926.

Dewey, J. "Valuation and Experimental Knowledge" in *The Philosophical Review*, Vol. XXXI, pp. 325 ff.

Edman, I. *Human Traits and Their Social Significance*, Chap. XV. Houghton Mifflin, 1920.

Everett, W. G. *Moral Values*,* Chaps. VII-VIII. Holt, 1918.

Joad, C. E. M. *Matter, Life, and Value*,* Part II. Oxford, 1929.

Leighton, J. A., "The Principle of Individuality and Value" in *Contemporary Idealism in America*, VII (edited by C. L. Barrett). Macmillan, 1932.

Moore, G. E. *Principia Ethica*, Chap. I. Macmillan, 1903.

Münsterberg, H. *Eternal Values*. Houghton Mifflin, 1909.

Parker, D. H. *Human Values*. Harper, 1931. Especially recommended.

Perry, R. B. *General Theory of Value*. Longmans, Green, 1926. A very important but extensive treatment.

—. *Present Philosophical Tendencies*, Chap. XIV. Longmans, Green, 1912. Recommended.

Picard, M. *Values, Immediate and Contributory*. New York University, 1920.

Prall, D. W. *A Study in the Theory of Value*. University of California (Publications in Philosophy, Vol. III, No. 2). 1921. Recommended.

Sheldon, W. H. "An Empirical Theory of Value" in *The Journal of Philosophy*, Vol. LXI (1914).

Sorley, W. R. *Moral Values and Moral Worth*. Cambridge, 1911.

Spaulding, E. G. *The New Rationalism*, Chap. XLV. Holt, 1918.

—. *What Am I?* Chap. V. Scribner, 1921.

Urban, W. M. *The Intelligible World*. Macmillan, 1929. Very important but difficult for the beginner.

—. *Fundamentals of Ethics*,* Chap. VIII. Holt, 1930.

—. "The Philosophy of Spirit" in *Contemporary Idealism in America*, VI (edited by C. L. Barrett). Macmillan, 1932.

CHAPTER XVII. MORAL AND ÄSTHETIC VALUES

Moral Values:

Alexander, S. *Moral Order and Progress*, Book II, Chap. II. Paul, Trench, Trübner (third edition), 1899.

Bosanquet, B. *Some Suggestions in Ethics*, Chap. III. Macmillan, 1918.

Bradley, F. H. *Ethical Studies*, Lectures II, VI. Oxford (second edition), 1927. Recommended.

Cunningham, G. W. *Problems of Philosophy*,* Chaps. XXIII-XXVII. Holt, 1924.

Dewey, J. *Human Nature and Conduct*. Holt, 1922.

Dewey and Tufts. *Ethics*.* Holt (revised edition), 1932.

Drake, D. *Invitation to Philosophy*,* Chap. XXV. Houghton Mifflin, 1932.

Dunham, J. H. *Principles of Ethics*,* Part I, Chap. X. Prentice-Hall, 1929.

Fite, W. *Moral Philosophy*, Chaps. I-IV. Dial, 1925.

Green, T. H. *Prolegomena to Ethics*, Book III, Chaps. I-II, V; Book IV, Chaps. I-IV. Macmillan, 1883. Important but difficult.

Laing, B. M. *A Study in Moral Problems*, Chaps. III, VII, IX-X. Macmillan, 1922. Stimulating and recommended for the more advanced student.

Laird, J. *A Study in Moral Theory*, Chap. XII. Macmillan, 1926. Advanced.

Palmer, G. H. *The Nature of Goodness*. Houghton Mifflin, 1903. Recommended.

Tsanoff, R. A. "The Theory of Moral Value" in *Contemporary Idealism in America*, X (edited by C. L. Barrett). Macmillan, 1932.

Tufts, J. H. *Creative Intelligence*, VII (edited by J. Dewey). Holt, 1917.

Æsthetic Values:

Bosanquet, B. *A History of Æsthetic*. Macmillan, 1892, 1917. Recommended.

—. *Three Lectures on Æsthetic*. Macmillan, 1915.

Burtt, E. A. *Principles and Problems of Right Thinking*,* Chap. XXVII. Harper (revised edition), 1931.

Carritt, E. F. *Philosophies of Beauty*. Oxford, 1931.

—. *The Theory of Beauty*. Macmillan, 1914. Recommended.

Croce, B. *Æsthetic as Science of Expression*. Macmillan, 1922. An especially important work, somewhat difficult.

Drake, D. *Invitation to Philosophy*,* Chap. XXIV. Houghton Mifflin, 1933.

Ducasse, C. J. *The Philosophy of Art*. Lincoln MacVeagh, 1929. Especially recommended.

Flaccus, L. W. *The Spirit and Substance of Art*. Crofts, 1920.

Gordon, K. *Esthetics*. Adams, 1919. Recommended.

Langfeld, H. S. *The Æsthetic Attitude*. Harcourt, Brace, 1920. Especially recommended for those interested in the approach of a psychologist.

Lee, V. *The Beautiful*. Cambridge, 1913.

Marshall, H. R. *The Beautiful*. Macmillan, 1924.

Parker, D. H. *Principles of Æsthetics*. Silver, Burdette, 1920. Recommended.

Parkhurst, H. *Beauty*. Noel Douglas, 1931. Recommended.

Prall, D. W. *Aesthetic Judgment*. Crowell, 1929. Especially recommended for more advanced students.

Puffer, E. D. *The Psychology of Beauty*. Houghton Mifflin, 1905.

Santayana, G. *The Sense of Beauty*. Scribner, 1896. A work of highest importance.

Stace, W. T. *The Meaning of Beauty*. Recommended.

CHAPTER XVIII. RELIGIOUS VALUES: NATURALISM AND IDEALISM

Religious Values:

Ames, E. S. *Religion*. Holt, 1920. A pragmatic treatment.

Baillie, J. *The Interpretation of Religion*, Part II, Chaps. V-VI. Scribner, 1928. Valuable for the more advanced student.

Brightman, E. S. *Religious Values*. Abingdon, 1925. A good account from the theistic point of view.

Galloway, G. *The Philosophy of Religion*. Scribner, 1914.

Hocking, W. E. *The Meaning of God in Human Experience*. Yale, 1912. Especially recommended.

Höffding, H. *The Philosophy of Religion*, Macmillan, 1914.

Knudsen, A. C. *The Doctrine of God*. Abingdon, 1930.

Lyman, E. A. *The Meaning and Truth of Religion*. Scribner, 1933.

Patterson, W. P. *The Nature of Religion*. Doan, 1925.

Pringle-Pattison, A. S. *The Idea of God*. Oxford, 1917, 1920. Very valuable but difficult.

Rashdall, H. *Philosophy of Religion*. Scribner, 1910.

Whitehead, A. N. *Religion in the Making*. Macmillan, 1926. Especially recommended.

Wright, W. K. *A Student's Philosophy of Religion*.* Macmillan, 1922.

History of Religion:

Durkheim, E. *Elementary Forms of Religious Life*. Allen and Unwin, 1915.

Frazer, J. G. *The Golden Bough* (one vol. abridged edition). Macmillan, 1923. A classic work.

Friess, H. L., and Schneider, H. W. *Religion in Various Cultures*. Holt, 1932. Especially recommended.

Malinowski, B. "Magic, Science and Religion" in *Science, Religion and Reality*, II (edited by J. Needham). Macmillan, 1925. Especially recommended.

Marett, R. R. *The Threshold of Religion*. Methuen, 1914.

Moore, G. F. *History of Religions* (2 vols.). Scribner, 1913, 1919.

Naturalism.

Cohen, M. R. *Reason and Nature*, Epilogue. Harcourt, Brace, 1931.

Crile, G. W. *Man—an Adaptive Mechanism*. Macmillan, 1916.

Dewey, J. *Experience and Nature*, especially Chap. X. Open Court, 1925. Valuable interpretation but difficult.

Drake, D. *Invitation to Philosophy*,* Chap. XXIII. Houghton Mifflin, 1933.

Elliot, H. *Modern Science and Materialism*, Chaps. I, V-VI. Longmans, Green, 1927.

Hocking, W. E. *Types of Philosophy*,* Chaps. III-VII. Scribner, 1929. Critical.

Loeb, J. *The Mechanistic Conception of Life*. University of Chicago, 1912.

Otto, M. C. *Things and Ideals*. Holt, 1924.

Perry, R. B. *Present Philosophical Tendencies*, Part II. Longmans, Green, 1912. Especially valuable discussion.

Russell, B. *What I Believe*. Dutton, 1929.

—. *Philosophy*. Norton, 1927.

—. *Mysticism and Logic*. Longmans, Green, 1918. Especially the essay, "Free Man's Worship."

Santayana, G. *Reason in Religion*. Scribner, 1905.

Sellars, R. W. *Evolutionary Naturalism*. Open Court, 1922.

—. *Religion Coming of Age*. Macmillan, 1928.

Ward, J. *Naturalism and Agnosticism*. (2 vols.) Macmillan, 1899.

Idealism:

Adams, G. P. *Idealism and the Modern Age*. Yale, 1919. Especially recommended.

Balfour, A. G. *Theism and Humanism*. Doran, 1915.

Barrett, C. L. (edited). *Contemporary Idealism in America*. Macmillan, 1932.

Bosanquet, B. *The Principle of Individuality and Value*. Macmillan, 1912. Very important but difficult.

—. *The Value and Destiny of the Individual*. Macmillan, 1913.

Cunningham, G. W. *The Idealistic Argument in Recent British and American Philosophy*. Century, 1933. Excellent for the advanced reader.

Drake, D. *Invitation to Philosophy*,* Chap. VIII. Houghton Mifflin, 1933.

Hocking, W. E. *Types of Philosophy*,* Chaps. XIX-XXVI and XXV. Scribner, 1929.

Hoernlé, R. F. A. *Idealism as a Philosophy*. Doran, 1927. Especially recommended.

Jones, H. *Idealism as a Practical Creed*. Maclehose, 1909.

Larrabee, H. A. *What Philosophy Is*, Chap. VIII. Macy, 1928.

Muirhead, J. H. *The Platonic Tradition in Anglo-Saxon Philosophy*. Macmillan, 1931.

Perry, R. B. *Present Philosophical Tendencies*, Chaps. VI-VIII. Longmans, Green, 1912.

Royce, J. *The Spirit of Modern Philosophy*, especially Chaps. XI-XII. Houghton Mifflin, 1892.

—. *Lectures on Modern Idealism*, Lecture X (edited by J. Loewenberg). Yale, 1919.

Sinclair, M. *The New Idealism*. Macmillan, 1922.

INDEX OF NAMES

Pages on which more important discussions of a philosopher's position occur are indicated by italics.

Adams, G. P., 170.
Alexander, S., 163, *190-192*, 353.
Aliotta, 39.
Ames, E. S., 349.
Anaxagoras, 79.
Anaximander, 63.
Anaximenes, 63.
Arnold, M., 346, 348.
Augustine, 95, 335.

Bacon, F., 17.
Baillie, J., 349, *350-351*.
Bentham, J., 282.
Bergson, H., 108, *184-187*, 189, 223, 274-275.
Berkeley, G., *115-121*, 131, 144, 159, *251-252*.
Berthelot, M., 31.
Biran, M., 283.
Boas, G., 282, 283.
Bohr, N., 73.
Boodin, J. E., 19, 107, 194.
Bosanquet, B., 14, 175, 305.
Boyle, R., 62, 116.
Bradley, F. H., 46, 56, *157*, 168.
Bridgman, P. W., 23.
Burnet, J., 63.
Burtt, E. A., 25, 298.

Cabanis, P. J. G., 282.
Carpenter, J. E., 256.
Cassirer, E., 129.
Catullus, 65.
Coc, G. A., 278.
Cohen, M., 19, 23.
Comte, A., 31, 36, *348-349*.
Condillac, E., 282.
Condorcet, 282.
Copernicus, 16, 195.

Cordemoy, 94.
Cunningham, G. W., 220.

Dalton, J., 73.
Darwin, C., 17, 24, 222, 234.
Democritus, *64-69*, 327.
Descartes, R., 12, 89, *90-95*, 232, 286-287.
De Sitter, 201.
Destutt de Tracy, 282.
Dewey, J., 4, *136-138*, 268-273, 351, 355.
Dirac, 23, 48.
Drake, D., 95, 140, 143, 344.
Driesch, H., 223.

Eddington, A. S., 20, 23, 72, 130-131, 196, 198.
Einstein, A., 179, 200 (also cf. 195-202).
Elliot, H., 74.
Emerson, R. W., 108, 111.
Empedocles, 64, 79.
Epicurus, *65-69*, 327-328.
Erdmann, J. E., 181.
Eucken, R., 62.

France, A., 261.
Fullerton, G. S., 16, 284.

Galileo, 122.
Gassendi, 70.
Geulinex, 48, 94.
Gorgias, 259.

Haeckel, E., 69-72.
Haldane, J. S., 225-226.
Hallett, H. F., 171.
Hartley, D., 282.

Harvey, W., 232.
 Hasan, S. Z., 307.
 Hegel, G. W. F., 290.
 Heisenberg, W., 74.
 Heraclitus, 1, 45, 64.
 Herschel, J., 214.
 Hibben, J. G., 13.
 Hobbes, T., 44, 61, 69-72, 93, 232,
 233.
 Hocking, W. E., 260-261, 271.
 Hoernlé, R. F. A., 23, 120, 224,
 225.
 Holt, E. B., 142.
 Horace, 65.
 Hubble, E., 201.
 Hume, D., 131-132, 180, 203-205,
 262, 275, 283-285.
 Hutcheson, F., 275.
 Huxley, T., 222.

James, W., 10, 12, 13, 31, 32, 36, 57,
 134-139, 139, 160, 170, 187-189,
 230-231, 243, 244, 266-268, 350,
 351-353.
 Jeans, J., 201.
 Jones, H., 10.

Kant, I., 12, 132-133, 148, 180-183,
 184, 189, 249, 255, 262-266, 330-
 331.
 Kepler, J., 122.
 Kronecker, 215.
 Krutch, J. W., 354.

La Mettrie, J., 69-72.
 Lange, A., 69.
 Langer, S., 148.
 Laromiguere, P., 283.
 Leibniz, G. W., 59, 121-127, 232.
 Leucippus, 64.
 Levy-Bruhl, L., 282, 349.
 Lewes, G. H., 228.
 Lewis, C. I., 268.
 Locke, J., 96-98, 116, 131, 176, 280-
 282, 284.
 Lodge, O., 69.
 Loeb, J., 223.
 Loewenberg, J., 45.

Lovejoy, A. O., 95, 142.
 Lucretius, 59, 65-69.
 McDougall, W., 95, 223, 239.
 McTaggart, J. M. E., 305.
 Marvin, W. T., 142.
 Meyerson, E., 75.
 Mill, J. S., 151, 208-213, 329.
 Minkowski, H., 201.
 Montague, W. P., 142, 303.
 Montaigne, M., 261.
 Moore, G. E., 314-315.
 Morgan, L., 146, 215, 219-220,
 227-228.

Newton, I., 24, 116, 123, 178.
 Noyes, A., 111.

Occam, 25.
 Ogden, C. K., 236.

Parker, D. H., 317-318, 335.
 Parmenides, 64, 174.
 Paulsen, F., 44, 181.
 Pearson, K., 151, 213, 215.
 Peirce, C., 134.
 Perry, R. B., 76, 141, 142, 145, 158,
 193-194, 253-254, 303, 316-317,
 318.
 Pillsbury, W. B., 282.
 Plato, 52-53, 84-88, 289.
 Plotinus, 276.
 Posidonius, 256.
 Pratt, J. B., 95.
 Price, R., 275.
 Priestley, J., 282.
 Pyrrho, 260.
 Pythagoras, 79-80.

Régis, S., 48, 94.
 Reid, T., 141.
 Renan, J. E., 31.
 Renouvier, C., 177.
 Roberts, M., 238.
 Rogers, A. K., 95.
 Rousseau, J. J., 274.
 Royce, J., 13, 161, 181, 335.
 Russell, B., 26, 32, 74, 106-107, 115,
 144, 146, 156, 195, 217, 241, 292-
 293.

Rutherford, E., 73.

Santayana, G., 95, 142, 277, 304, 316.

Schiller, F. C. S., 38, 56, 136, 138-140, 150, 268-273, 298-299.

Schopenhauer, A., 107-108, 183-184, 342.

Schrödinger, E., 74.

Scoot, R. M., 79.

Sellars, R. W., 143, 241.

Shaftesbury, Earl, 275.

Smith, N. K., 305.

Socrates, 12, 155, 289.

Spaulding, E. G., 142, 159, 193, 305.

Spencer, H., 243-244.

Spinoza, B., 56, 59, 101, 102-107, 131, 347.

Strong, C. A., 95, 142.

Swabey, W. C. and M. C., 75.

Swinburne, A. C., 109.

Taylor, A. E., 56.

Thales, 63.

Thilly, F., 282.

Tsanoff, R. A., 335, 336.

Tyndall, J., 244.

Urban, W. M., 315, 323.

Virgil, 65.

Warren, H. C., 242.

Watson, J., 236-239.

Whitehead, A. N., 26, 29, 120, 144, 192.

Windelband, W., 165, 289.

Wolff, C., 62.

Wolfson, H. A., 95, 103.

Woodworth, R. S., 236.

Wundt, W., 95, 234.

Zeno, 169, 172-174.

INDEX OF SUBJECTS

Absolute, meaning of, 162.
Adaptation, 4; physical, 4; social, 5-7; intellectual and spiritual, 7-11.
Æsthetic values, 341-345; breadth of influence, 341; and reason, 342-343; and moral, 343; status, 344. Cf. Values.
Animism, and interactionism, 239.
Assumptions, unsound, 11-12; explanation of primary, 34.
Atom, structure, 51-52; of Lucretius, 59; materialistic, 62; modern conception of, 73-75.

Behaviorism, 236-239.
Body, and mind, dualistic account, 88-89; Descartes' view, 90-95; Locke's view, 96-98; materialistic account, Ch. IV; views in modern psychology, 236-245.
Brahma, quoted, 112.

Causality, Chs. XII-XIII; substance and sense perceptions, 49-50; God and causality in the philosophy of Descartes, 91-92; God as ultimate Cause, 101-102; Spinoza's account, 102-103; relations of cause, 154-155; Hume's criticism, 203-205; present use in science and philosophy, 205-207; Aristotle's classification, 207; Mill's Methods, 208-213; in the mind-body relationship, 234-236; and free will, 245-248.
Certainty, cf. Knowledge.
Chance, in nature, 67-68; and determinism, 218-221; and free will, 245-248.
Change, problem of, 46-47; in space and time, 171-174. Cf. Causality.

Coherence, principle of in scientific thought, 25-28; in ordinary experience, 114-115; in the theory of truth, 295-300.
Contradiction, 2; in scientific thought, 25-28; and truth, 295-300.
Convention, significance of, 2, 3.
Definition, as limitation, 103.
Deity, in Alexander's account, 192. Cf. God.
Desire, and the desirable, 10-11; and the manipulation of objects, 89; for Descartes, 233.
Dogmatism, meaning of, 254; in philosophy, 255; concerning religious knowledge, 255-258; and sacred writings, 255; and inspired men, 256-257; and religious authority, 257; the philosopher's attitude toward, 257-258.
Double Aspect Hypothesis, 240.
Doubt, 12; Descartes' *Method of*, 90-91. Cf. Scepticism.
Dualism, Ch. V; of form and matter, 78-89; the common sense view, 89; scholastic, 95; as a theory of knowledge, 95; of Descartes, 90-96; of Locke, 96-98; and spiritual substance, 113.

Ego-centric predicament, 249-254; Perry on, 253-254.
Electrons, known as effects, 51-52; modern conceptions of, 73-75.
Emergence, 227-229.
Ends, and means, 10. Cf. Pragmatism.

Energy, ultimate for Haeckel, 71; in contemporary theories of the atom, 72-75; as basic substance, 107.

Enumeration, in the sciences, 18-19; and correlation, 19.

Epiphenomenalism, 240-241.

Evil, and limitations, 110-111.

Evolution, 221-229; and mechanism, 221-223; organic view, 225-227; and emergence, 227-229.

Explanation, meaning for philosophy and for the sciences, Ch. II; search for final, 36-37; functional, 30-31; limits of—cf. Positivism; three stages of (Comte), 348-349.

External relations, 158-160. Cf. Relations.

Facts, how established, 150; and values, 311-312.

Force, cf. Causality.

Forms, Platonic conception, 52-53; universality of, 81-83; reality of, 83-88; constitute the subject-matter of philosophical knowledge, 86-87; Beauty, Truth and Goodness as the supreme, 87; Plato's doctrine of, 84-88.

Freedom of Will, and causality, 245-248; real nature of, 247-248; for God, 248.

God, and religious values, Ch. XVIII; dependence of the world on—for occasionalism, 47-48; materialistic denial of, 68, 76; as "necessary" in mediæval philosophy, 95; Descartes' proof of the existence of, 91-92; as substance, 95; Christian and Pantheistic views of, 100-101; as eternal Cause, 101; indefinable, 103; *existence* and *essence* of, 104; and the problem of evil, 110-111; creator of the world of *monads* (Leibniz), 125-126; Alexander's conception of Deity, 192; in the position of subjective idealism, 307; "intellectual love" of, 347. Cf. Religion.

Hedonism, 326-329.

Hertha, quoted, 109.

Hypothesis, cf. Ch. II; Double Language, 241.

Idealism, and substance, 131-134; internal relations and the Absolute, 160-162; view of space and time, 180-184; theory of knowledge, 305-309 (also cf. Phenomenalism); relation to realism, 305; and the mind-body problem, 305-306; indications of mind in nature, 306-307; subjective theory, 307; objective theory, 307-309; view of relations, 308; view of particulars and the universal, 308-309; position with respect to religious values, 355-357; criticism of naturalism, 355-356; view of values and man's status, 356-357. For the form of idealism proposed by: Plato, 81-89; Spinoza, 101-106; Berkeley, 115-121; Leibniz, 121-127; Kant, 132-133, 180-183, 262-265.

Ideas, 89; of Plato—cf. Forms; innate, 91; simple, 96-97; and objects, 117; knowledge limited to, 251-254. Cf. Knowledge.

Indeterminacy, in nature, 23.

Infinity, of space and time, 174-177; of Being for pantheism, 100, 103-104, 111.

Interactionism, 94.

Intuitionism, theory of time, 184-188; theory of knowledge, 273-278; and values, 277-278.

Investigator, limitations of the, 29-30. Cf. Positivism.

Judgment, 155.

Justice, 9.

Knowledge, and Truth, Chs. XIV–XV; the critical examination of, 34–36; as an object of philosophical inquiry, 35–36; guided by interest, 38–39; and the ego-centric predicament, 249–254; and opinion, 249; and the world of appearances, 249 ff.; experience as a test of, 250–251; consistency as a requirement, 295–300; coherence in scientific, 25–29; of ideas, 250–252; the view of dogmatism, 254–258; of scepticism, 258–261; of phenomenism, 261–266; of pragmatism, 266–273; of intuitionism, 273–278; of realism, 300–305; of idealism, 305–309; empiricism, 279–285; rationalism, 286–287. Cf. Truth.

Laws, of nature, 67–68; uniformity, 213; meaning of, 214.

Life, as activity, 233. Cf. Evolution.

Loom of Years, quoted, 111.

Man, nature for pantheism, 100, 108–109; naturalism's view of, 354–355; idealism's view of, 356–357; primitive—lack of adaptation, 8.

Materialism, Ch. IV; fundamental concepts, 60–62; ancient, 62–69; matter, motion, and consciousness, 67; law and chance in nature, 67–68; Modern—Hobbes, La Mettrie, and Haeckel, 69–72; present view of matter, 72–75; universality of matter, 113.

Matter, for materialism, 61–66; extended, 61; indestructible, 62; motion of, 62–63; exists in atomic units, 62; all things reducible to, 65–66; and conscious life, 66–67; knowability of, 71–72; present conception of, 72–75; denied reality by Berkeley, 117; Alexander's view of, 191.

Meaning, investigation of, 37–40. Cf. Value.

Measurement, in the sciences, 20–23; difficulties and common errors in, 22–23; and regularity in nature, 23.

Mechanism, and evolution, 221–225; and emergence, 227–229. Cf. Materialism.

Mind, and matter—for dualism, 88–98; as thinking substance, 93; relation to body, Ch. XIII. Cf. Chs. XIV–XV.

Mode, Spinoza's view of, 105.

Monads, of Leibniz, 59; description of, 125; grades, 125; pre-established harmony between, 125; criticism of the theory of, 126–127.

Monism, and pluralism, of substance, 56–59; of relational systems, 158–162; Neutral, 106–107, 241.

Motion, significance for materialism, 65–68; and the problem of space and time, 191; uniformity in nature, 213–220.

Naturalism, its view of values, 353–355; view of man's status, 354–355; instrumental nature of all values, 316–323. Cf. Materialism, Ch. IV. Also cf. Mechanism and evolution, 221–229.

Nature, regularity in, 23; Whitehead's description of, 29; Schopenhauer on, 107–108; uniformity of, 213–221; as ideas, 119–120.

Objects, nature of, 41; Lotze on, 42; present conceptions of, 74–75; and mind, 88–89; as perceptions, 113–115, 116–117; consistency in perceptions, 115; in thinking minds, 119; position of Perry, 145; of Russell, 146.

Observation, in scientific method 16; Darwin's extensive use, 17.

Occasionalism, 48.

Pantheism, Ch. VI; in Egypt, 99; in India, 99–100; and Christianity, 100–101; of Spinoza, 102–105; and Neutral Monism, 106–107; modern, 107–112; in literature, 108–112; strength and weakness, 109–112.

Paradoxes, of Zeno, 172–174.

Parsimony, principle of, 25.

Perception, cf. Chs. XIV–XV. Also cf. Sensation.

Perfectionism, 329–332.

Phenomenalism, 261–266.

Philosophy, its aim and problems, Ch. I; and the sciences, Ch. II, also, 4; method, 11–12; dependence on reason, 12; and scientific method, 15; concreteness in explanation, 32; and truth, 35; and knowledge of universal forms, 86–87.

Pluralism, of substances, 56–59; of relations, 158–160; realistic, 301, 303–305.

Positivism, 39, 348–349.

Potentiality, for Leibniz, 123–124.

Pragmatism, general view of substance, 134–140; view of truth, 136–137; emphasis on results, 135; denial of an absolute, 135; the status of facts, 150; view of space and time, 187–189; and the problem of knowledge, 266–272; theory of instrumental values, 320–323; views on religion—naturalism and the *Will to Believe*, 351–353.

Properties, cf. Qualities.

Proposition, nature of a, 155–156.

Psychic-neural parallelism, 239–240.

Psychology, progress of, 231–236; theories of mind-body relation, 236–245; influence of physics, 232–233; of chemistry, 233–234; of biology, 234–235; behaviorism, 236–239; animism and interactionism, 239; psychic-neural

parallelism, 239–240; epiphenomenalism, 240–241; neutral monism, 241; double language hypothesis, 241–242; mind-stuff theories, 230–231, 242–243; causality in, 234–236; meanings and values for, 231.

Qualities, measurement of, 37–38; inadequate to constitute a world, 49; relation to substance, 55–56; primary and secondary, 97; relations of, 154.

Quantity, relations of, 153–154.

Realism, view of substance, 140–146; critical, 142–144; new, 144–146; on the nature of objects—Perry, 145; Russell, 146; and external relations, 158–160; view of space and time, 189–195; Alexander on, 190–192; American realists on, 192–195; theory of knowledge, 300–305; theories of value, 314–316, 316–318.

Reason, philosophy's confidence in, 12–14; in scientific method, 24–29; rationalism, 286–287; for Plato, 88; its eternal view, 105; and truth, 295–300; and religion, 346–348. Cf. Knowledge.

Relations, Ch. IX; Space Time, Chs. X–XI; Causal, XII–XIII; of Knowledge, Ch. XIV–XV; of Values, XVI–XVIII; relations of thought and of the physical world, 148–149; treatment by the sciences, 151; meaning of, 151; spatial, 152; temporal, 152; quantitative, 153; qualitative, 154; causal, 154; logical, 155; What is a relation? 156–158; how attached to objects, 156–157; plurality of, 158–160; external, 158–160; internal, 160–162; absolute order of, 162; symmetrical and asymmetrical, 192–193; of body and mind, 230–244; of values, 324–325; moral, 326–

341; of æsthetic values, 341–345; of man to the universe, 350.

Relativity, theory of, 195–202. Cf. Chs. X–XI.

Religion, and reason, 346–348; what is religion? 348–350; of humanity, 348; appeal to a Superior Being, 349; as apprehension of value within the cosmic order, 350; pragmatic views of, 351; naturalism and the *Will to Believe*, 351; naturalism and religion, 353–355; idealism and religion, 355–357; the idea of God, 357. Cf. God.

Scepticism, 258–261.

Sciences, and philosophy, Ch. II; meaning of explanation for, 15–31; and scientific method, 15; importance of observation in, 16–18; of systematization, 18; of enumeration, 18–19; of measurement, 20–23; logical synthesis in, 24–29; principle of parsimony, 24; principle of coherence, 25–28; limitations of the scientific investigator, 29; functional explanation in, 29–30; comparison with philosophy, 31–40; abstract character of explanations, 32–34; primary assumptions, 34; attitude towards the problem of knowledge, 34–36; attitude with respect to values, 37–40; and the present conception of matter, 72–75; effect on of Berkeley's view, 119–120; and the concept of substance, 128–131; interest in space and time, 178–180; meaning of causality for, 205–207; and natural law, 213–214; and the uniformity of nature, 214–218; and evolution, 221–229; psychology as one of the, 231–236; and values, 311–313.

Scientific method, cf. Sciences.

Sense perception, and knowledge, Chs. XIV–XV; cause of sensations, 50; and the idea of substance, 49–50; as activities of a monad, 124, 125; and acquaintance with external objects, 96–97, 149–150; as activity of minds, 115–121; space and time as forms of, 180–183.

Social convention, 2, 3; adaptation, 5–7; test of scientific observation, 29, 34–35; relations, 337–339; influence on morals, 339–341; being and religion, 349–350.

Space and Time, problems of, Ch. X; modern views of, Ch. XI; relations of, 152–153; appearance of, 163–169; as wholes, 164–165; as empty, 165; variability in our experiences of, 166–167; as extended series of parts, 169–171; *point instant* and *specious present*, 169–171; problem of motion in, 171–174; paradoxes of Zeno, 172–174; infinity of, 174–177, 193–194; psychological origin of our sense of space, 175–176; present philosophical and scientific interest in, 178–179; idealistic view of, 180–184; Hume's position, 180; as forms employed by the perceiver, 180–182; as applicable only to the phenomenal world, 183–184; and the uniformity of nature, 184; anti-intellectualistic theories of, 184–189; realistic theories, 189–194; Alexander's view, 190–192; in the theory of relativity, 195–202.

Spiritual, perception, 116; *force*, 121–127; explanation in terms of activity, 121–122; idea of *force*, 122; Leibniz's position, 123–127; and potentiality, 123–124; of the monad, 125–126; *substance*, Ch. VII; and perception, 113; argument for, from experience, 113–114; and the denial of matter, 116–117; and science, 119–120,

criticism of Berkeley's theory of, 120-121.
 Standards, discovery of, 11. "
 Substance, and properties, Ch. III; Materialistic, Ch. IV; Dualism of, Ch. IV; Pantheistic position, Ch. VI; Spiritual, Ch. VII; Contemporary Views of, Ch. VIII; apparent need for substance, 41; Aristotle on, 41-42, 103; never perceived directly, 42, 96; generic significance of the term, 43; customary belief in, 43-44; Hobbes on, 44; arguments for, 45-51; as basis of permanence, 45; and change, 46-47; as basis of independence and self-existence, 47-49; as cause of sense perceptions, 49-50; difficulties with, 51-56; electrons as substance, 51-52; substance as the form of things, 52-53; and the nature of objects, 51-55; relation of substance to its properties, 55-56; monism and pluralism, 56-59; mind and matter as substance, 92-93; and qualities, 96; useless for explanation, 98; Spinoza's view of, 102-107; and modern science, 128-131; as an assumption, 128-129; idealistic attitude toward, 131-134, 308; Hume's criticism, 131-132; Kant's criticism, 132-133; pragmatic attitude toward, 134-140; James' view, 134-136, 139; Dewey's view, 136-138, 139; Schiller's view, 136, 138-140; realistic attitudes toward, 140-146; view of critical realism, 142-144; view of neo-realism, 144-146.

Terms, subject and object, 155.
 Truth, Plato's view of, 87; *pragmatic* theory of, 136-137, 266-273; *intuitive*, 273-278; *empirical* and *rational*, 279-283; what is truth?, 288-290; *corre-*

spondence theory of, 290-295; *coherence* theory, 295-300; for realism, 300-305; for idealism, 305-309; as a value, 39—cf. also, Chs. XVI-XVII.

Understanding, cf. Knowledge.

Values, Human, Ch. XVI; Types of—especially moral and aesthetic, Ch. XVII; Religious, Ch. XVIII; human importance, 7-9; as the *real*, 37; investigation of, 37-39; truth as, 39; as a subject of study, 310-313; and facts, 311-312; place in the physical and social sciences, 312; nature of, 313-320; as indefinable, 314-316; defined in terms of *interest*, 316-318; as expression of universal harmony, 318-320; instrumental and intrinsic, 320-323; the "great divide" in contemporary theory, 323; classification of, 324-325; *moral*—the meaning of morality, 325-326; idea of a highest, 326-329; hedonism, 326-328; perfectionism, 329-332; unity of moral values, 332-337; moral values and the social order, 337-341; in judgments on social relations, 337-339; social influence on moral judgments, 339-341; *aesthetic*, 341-345; extent beyond the realm of art, 341; in reasoning, 342-343; lack of imperative, 343; relation to moral values, 342-344; artistic depiction of evil, 343-344; typical problems of the philosophy of art, 344-345; *religious*, 346-357; and reason, 346-348; and the nature of religion, 348-351; Comte's view of religion, 349-350; as values arising in the moral trust in reality, 350-351; pragmatic view of religious values, 351-353; naturalistic view,

353-355; idealistic view, 355-
357.

Wisdom, 1.

Wonder, 9.

World, problem of its nature, 2;

visible and intelligible, 87-88;
Plato's view, 88; of minds and
ideas, 115-121; phenomenal, 261-
266; of appearances, 249; nat-
uralistic view of, 353-355; ideal-
istic view of, 355-357.



